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INDEX

TO THE

EXECUTIVE DOCUMENTS

OF THE

HOUSE OF REPRESENTATIVES

FOR THE

THIRD SESSION OF THE FORTY-SIXTH CONGRESS,

1880-'81.

IN 30 VOLUMES.

VOLUME 18.—Nos. 9 to 66, except Nos. 12, 13, 42, 47, and 55.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1881.

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46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 9.

ANNUAL REPORT

OF THE

ATTORNEY-GENERAL

OF THE

UNITED STATES

FOR

THE YEAR 1880.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1880.

LETTER

FROM

THE ATTORNEY-GENERAL OF THE UNITED STATES

TRANSMITTING

His annual report for the fiscal year ending June 30, 1880.

DECEMBER 6, 1880.—Ordered to lie on the table and be printed.

DEPARTMENT OF JUSTICE,
Washington, December 6, 1880.

SIR: I have the honor to transmit, herewith, my annual report for the year 1880.

Very respectfully, your obedient servant,

CHAS. DEVENS,
Attorney-General.

The SPEAKER *of the House of Representatives.*

ANNUAL REPORT

OF

THE ATTORNEY-GENERAL OF THE UNITED STATES.

DEPARTMENT OF JUSTICE,
Washington, D. C., December 6, 1880.

To the Senate and House of Representatives of the United States in Congress assembled:

In obedience to the duty imposed by law, I have the honor to submit the following report of the business transacted by the Department of Justice during the preceding fiscal year, including the statistics of crime under the laws of the United States, a statement of the appropriations controlled by the Attorney-General, and such other matters as seem to me proper to bring to the attention of your honorable body.

THE SUPREME COURT OF THE UNITED STATES.

The pressure upon the docket of the Supreme Court continues to increase. While there were five causes of original jurisdiction and 1,133 appeals docketed at the October term, 1878, at the last term there were ten original causes and 1,196 appeals. In five of last term's original actions the United States was called upon to resist the call for the exercise of the original jurisdiction of the Supreme Court. Two of them, mentioned in last year's report as having been argued and then held under advisement, required a construction of Amendments XIII and XIV to the Constitution—one being an indictment found in a United States circuit court against a State judge for willfully excluding from the jury lists prepared by him, certain citizens solely on account of being of the African race and color and of a previous condition of servitude. For the purpose of presenting the jurisdictional question, the defendant sued out a writ of *habeas corpus* to procure his release from custody under this indictment. Upon the first day of March last the court announced the opinion that the act of Congress (of March 1, 1875, chapter 114, section 4; see 18 Stat., 336) under which the petitioner was indicted was constitutional, and refused to order his discharge (*Ex parte* Virginia, 100 U. S., 339, 349). The other case, touching these amendments, was a petition for a writ of *mandamus* directed to a circuit court requiring it to remand to a State court a criminal case which had been thence removed because the State judge presiding at the trial had denied the respondents' motion to have the petit jury composed, in part, of persons of the same color as the defendants. The writ of *mandamus* was awarded, the court holding that no such right existed as was claimed; that the prisoners could not legally claim to have men of any particular color on the jury, but only that none, otherwise eligible, should be kept off solely by reason of color (Virginia *v.* Rives, 100 U. S., 313). It may not be improper to notice, in this connection, that, in a private cause

reported in the same volume, the court reversed a judgment entered in a State court upon a verdict returned by a jury from which persons of the African race and black color were, in conformity with a State statute, excluded. (Strauder *v.* West Virginia, 100 U. S., 303.)

The opinions of the court in "The Election Cases" (so-called), being indictments under Revised Statutes, sections 5515 and 5522, for frauds at or connected with elections, were announced March 8, 1880, holding these provisions to be constitutional. (*Ex parte* Siebold, 100 U. S., 371, and *ex parte* Clark, *Id.*, 399.)

Section 643 of the Revised Statutes, authorizing the removal from the State to the circuit court of an indictment, where the respondent is a Federal officer, and sets up the defense that the act charged as criminal was done rightfully by him, in the exercise of official duty, was also declared constitutional in Tennessee *v.* Davis (100 U. S., 247).

Three cases, raising the question of the constitutionality of the "Civil Rights Act" of March 1, 1875, c. 114, so far as the same seeks to secure to all men equal rights to the accommodations of inns, theaters, &c., have been submitted at the current term (October Term, 1880), but at the date of this report no decision has been promulgated.

While the causes advanced to be heard at the opening of the present term were of importance, to none of them did the grave considerations and consequences attach that were inseparable from those above-mentioned, which it became my duty to discuss at the beginning of the prior term.

Besides the civil rights cases, the arguments already made have pertained to questions of the administration of the Land Office branch of the Interior Department, to determine whether or not a patent for land becomes effective without delivery; whether the 36th section, generally set apart for school purposes, passes from the United States to the State, if such section be mineral lands; and whether or not the Secretary of the Interior can be required by the writ of *mandamus* issued by the supreme court of this district to deliver a recorded patent.

Cases involving the constitutionality and construction of the statutes excluding lottery matter from the benefit of ordinary postal facilities, and especially the right to refuse delivery of all letters addressed to certain persons ascertained to be engaged in that business, were assigned for an early hearing, but circumstances have hitherto prevented their presentation.

One case of great pecuniary consequence, and presenting important questions of law, has been assigned for hearing early in January next. It is the case of C. C. Campbell *v.* Thomas L. James, postmaster at the city of New York. It is based upon an alleged infringement by him of the complainant's patent for a canceling stamp. The stamp is the one furnished by the Post-Office Department to many, if not all, of the large post-offices, for use in their daily business. The circuit court in New York gave judgment for about $68,000 against Mr. James, and refused to make any entry of "probable cause" under Revised Statutes, Section 989, upon the ground that a postmaster is not an "officer of the revenue" within the meaning of that section. Since then the same complainant has instituted proceedings against thirty or forty other postmasters in New England, New York, and New Jersey. Inasmuch as these functionaries are simply carrying out the directions of the Post-Office Department, in the ordinary and necessary routine of business, it would seem that they ought to have the same protection, as to their personal liability to respond for their official acts, as is given by section 989 to collectors and other officers of the customs revenue. I would, therefore,

respectfully recommend such an amendment of that section as would extend its provisions to postmasters and officers of the internal revenue service. The learned circuit judge who gave the opinion in Campbell *v.* James doubted if these latter were comprehended within the terms of existing legislation.

In the case of Campbell *v.* James, as in that of Fletcher *v.* Blake, already advanced and submitted, questions arise as to the existence and extent of the liability of the officers of the government, or of the government itself, for the use by such officers in the discharge of official duties, of a patented article, and how the profits or damages are to be ascertained or determined. Legislation upon these points may possibly become necessary after these causes are decided.

As hereinbefore mentioned, the Attorney-General appeared in five of the ten original actions upon the docket of the October term, 1879. He also appeared in 229 of the 1,196 appealed cases. Of those finally disposed of at that term, twenty-three judgments favorable to the United States were affirmed, and five reversed. Thirteen adverse judgments were affirmed, and seven reversed. In sixteen cases the appellants failed to enter and perfect their appeals, which were dismissed at the instance of the government. In three cases the United States abandoned its appeal, and other (adverse) parties did the same in four cases. Of five cases in which questions arose below upon which the judges were divided, two were answered favorably to the contention of the prosecuting officer below, and three were so answered as to require an abandonment of the indictments. Only one cause submitted by the government at the last term remains undecided, and held under advisement by the court. This is the case of Springer *v.* the United States, which was fully argued on both sides. Beside some questions of minor importance peculiar to the case, there was a question of grave importance raised in it which will probably require the decision of the Supreme Court, unless the minor questions adverted to shall render it unnecessary. This question involves the construction of what is known as the "income tax law."

ADDITIONAL JUDGES.

The necessity of making additional provision for the transaction of business in the Federal courts becomes each year more apparent, as the increase of that business is constant.

In the Supreme Court the business is usually at present from two years and a half to three years behind, and it is impossible that this accumulation can be diminished while so large an amount is annually added to it. The cases involve elaborate discussion and laborious examination. Nor can it be expected that more can be disposed of than are now decided in the annual session, or that any assiduity on the part of the distinguished magistrates who compose the court will enable them to accomplish more than they now do.

A similar condition of things exists in nearly all the circuit courts. For several years there has been a pressing want of an additional judge in the second circuit, and it now seems to me impossible that a single additional judge would enable that court, even if there is no increase of business, to transact that which will regularly come before it.

It will be observed that there were on July 1, 1880, 26,789 civil suits to which the United States was not a party pending in the circuit and district courts of the United States; and that on the same day in 1879 there were 19,771 similar suits pending, showing a large increase.

In many other circuits the business of the court is necessarily behind by reason of the constantly increasing pressure upon it. The evils which the delay of justice occasions are too obvious to require discussion. They may amount often to a complete denial of justice. It seems to me that an intermediate court of errors and appeals can be created which shall relieve the Supreme Court of a portion of its jurisdiction, and which shall enable the business of the circuit courts also to be expedited. This can be done by adding to the number of circuit judges. Without desiring to propose any plan in detail for the consideration of Congress, I respectfully suggest that if the judges of the circuit courts should be increased by the addition of one judge to each circuit (except the second, where two should be added), the means would be provided by which an intermediate appellate court could be formed in each circuit, consisting of two circuit judges and the circuit justice, while the ordinary duties of the circuit court itself would be more promptly and efficiently performed. According to some defined plan the judges of the district courts should be authorized to sit in the intermediate court in case of the absence or disability of one of the circuit judges or the justice of the Supreme Court assigned to the circuit. An appellate court of such a character could safely be invested with a very large jurisdiction; and it would seem to me that no appeal should be permitted therefrom unless the sum in dispute should exceed $10,000, or unless the judges themselves of such intermediate court should certify that the case was one of such difficulty that it might properly be reargued in the Supreme Court. The expense of such an addition to the judicial force at present salaries would be but $60,000, and would be substantially all the expense necessary to be incurred. This certainly is a trifling sum in comparison with the objects of relieving the Supreme Court and the circuit courts, and thus giving parties an opportunity for a speedy trial.

COURT OF CLAIMS.

The total appropriation for defense of suits in this court for the last fiscal year was $25,000. Of this sum there remained on the 1st of July subject to the payment of claims not presented at that date $271.42.

The following is a summary of suits tried or otherwise disposed of since the last report:

CLAIMS FOR PROCEEDS OF CAPTURED AND ABANDONED PROPERTY.

Of this class eight suits, claiming in the aggregate $827,428.48, were brought to trial. In seven of these, claiming $777,428.48, judgment was for defendants; and in one, claiming $50,000 judgment for claimant for $1,753.33.

MISCELLANEOUS CLAIMS.

Of these 232 suits, claiming in the aggregate $2,115,200.07, were brought to trial. In 39 of them, claiming in the aggregate $1,078,975.17, judgment was for defendants; and in two of these the defendants recovered $18,884.22 on counter-claims. In 193 suits, claiming $1,036,224.90, judgment was for claimants for the aggregate amount of $361,049.79.

Whole number of cases tried	240
Amount claimed	$2,942,628 55
Cases decided for defendants	46
Amount claimed	$1,856,403 65
Cases decided for claimants	194
Amount claimed	$1,086,224 90
Judgments rendered therein	$362,803 12
Amount recovered by defendants on counter claims	$18,884 22

On motions made under the late thirty-fourth rule of the court, and under sections 5, article 12, of the present rules for dismissal and trial of certain suits for want of prosecution, twelve hundred and fifty-six cases, claiming in the aggregate $474,259.29, were brought to trial and dismissed.

The total number of suits dismissed since the last report is 1,302, in which the aggregate amount claimed is $2,330,662.94.

The tabular statement presented with previous reports is annexed, with additions to date (Exhibit E).

By act of June 16, 1880, the jurisdiction of the court was extended to certain classes of claims against the District of Columbia, and six months allowed for filing such claims. One hundred and forty-two suits, claiming in the aggregate upwards of $3,000,000, have thus far been brought under this act.

By this act the Attorney-General is charged with the defense of the District against such suits, but no appropriation was made for the expense of the defense. Considering that Congress must have intended the defense to be conducted in connection with the defense of suits against the United States, the assistants employed in the latter service have also conducted the defense of the District. I would suggest, however, that as the service is largely increased, there should be an additional appropriation of $5,000 for the current fiscal year.

I respectfully recommend that section 1072 of the Revised Statutes, in so far as it requires the petition filed in the Court of Claims to be verified by "the affidavit of the claimant, his agent, or attorney," be amended by striking out the words "his agent or attorney." I can see no good reason why the petition should not in every case be verified by the claimant, and the present provision has in some cases facilitated the presentation of fraudulent claims, as I believe from evidence which will be presented if desired.

CIRCUIT AND DISTRICT COURTS OF THE UNITED STATES.

Exhibits A, B, and C show the business of the circuit and district courts of the United States in the several judicial districts during the last fiscal year.

Exhibit A is a statement of the civil suits, to which the United States was a party, terminated in the circuit and district courts of the United States during the fiscal year ending June 30, 1880, and of such suits pending in said courts July 1, 1880.

During the last fiscal year 2,423 civil suits were terminated; in 1,118 of these judgments were for the United States, in 255 for the defendants, and 1,050 were either dismissed or discontinued; 12 were appealed from the district to the circuit court, and 24 from the circuit to the Supreme Court.

Many of the civil suits reported dismissed or discontinued were settled by authority of the Treasury Department and discontinued under its direction.

Four thousand one hunded and ten civil suits, to which the United States was a party, were pending July 1, 1880.

Exhibit B is a statement of the criminal prosecutions terminated in the circuit and district courts of the United States during the last fiscal year, and of such prosecutions pending July 1, 1880.

Nine thousand two hundred and sixty-nine criminal prosecutions were terminated during the last year; 152 of these were prosecutions under the customs laws, in which there were 92 convictions, 18 acquit-

tals and 42 were entered *nol. pros.*. discontinued, or quashed; 6,341 under the internal-revenue laws, in which there were 3,525 convictions, 683 acquittals, and 2,133 were entered *nol. pros.*, discontinued, or quashed; 439 under post-office laws, in which there were 256 convictions, 60 acquittals, and 123 were entered *nol. pros.*, discontinued, or quashed; 70 under enforcement acts, in which there was 1 conviction and 2 acquittals, while 67 were entered *nol. pros.*, discontinued, or quashed; 5 under naturalization laws, all of which were entered *nol. pros.*, discontinued, or quashed; 156 under intercourse laws, in which there were 122 convictions, 14 acquittals, and 20 were entered *nol. pros.*, discontinued, or quashed; 71 under pension laws, in which there were 35 convictions, 16 acquittals, and 20 were entered *nol. pros.*, discontinued, or quashed; 40 for embezzlement, in which there were 10 convictions, 10 acquittals, and 20 were entered *nol. pros.*, discontinued, or quashed; 1,995 were miscellaneous prosecutions, in which there were 940 convictions, 335 acquittals, and 720 were entered *nol. pros.*, discontinued, or quashed.

In many of the prosecutions under internal-revenue laws entered *nol. pros.*, discontinued, or quashed, a compromise and settlement was made in the Internal Revenue Bureau of the Treasury Department.

Seven thousand, one hundred and forty-six criminal prosecutions were pending July 1, 1880, viz, 198 for violations of customs laws; 4,896 for violations of internal-revenue laws; 309 for violations of post-office laws; 269 prosecutions under the enforcement acts; 2 under naturalization laws; 24 under intercourse laws; 93 under pension laws; 108 for embezzlement, and 1,247 miscellaneous prosecutions.

The supplement to Exhibits A and B shows the amounts arising from civil suits, to which the United States was a party, and from criminal prosecutions in the circuit and district courts of the United States during the last fiscal year.

The aggregate amount of judgments rendered in favor of the United States in civil suits during the last year was $1,197,028.02, and the amount actually collected last year on these judgments was $130,707.25, while $194,016.73 was obtained during the year on judgments rendered in former years for the United States, and $167,853.44 was otherwise realized in civil suits.

The aggregate amount of fines, forfeitures, and penalties imposed during the year in criminal prosecutions was $354,538.51, and the amount of these fines, forfeitures, and penalties collected during the year was $69,542.94, while $12,371.56 was realized on fines, forfeitures, and penalties imposed in former years.

Exhibit C is a statement of the civil suits, to which the United States was not a party, commenced and terminated in the circuit and district courts of the United States during the last fiscal year, and of such suits pending July 1, 1880.

Eleven thousand three hundred and ninety-seven such suits were commenced during the year, of which 2,174 were cases in admiralty and 9,223 were other miscellaneous suits.

Eight thousand six hundred and three suits of this kind were terminated last year, of which 1,463 were cases in admiralty and 7,410 were other miscellaneous suits.

Judgments for plaintiffs in these cases were as follows: 781 in admiralty, amounting to $659,500.92; 3,438 in other suits, amounting to $37,611,973.78.

Judgments for defendants were 289 in admiralty, amounting to $2,705.39, and 1,871 in other suits, amounting to $86,214.38; 118 cases in

admiralty were either dismissed or discontinued, as were also 406 other suits, while the disposition of 275 cases in admiralty and 1,415 other suits reported terminated during the year is not stated.

Twenty-six thousand seven hundred and eighty-nine civil suits to which the United States was not a party, were pending in the circuit and district courts of the United States July 1, 1880, viz, 2,948 in admiralty, and 23,841 other miscellaneous suits.

BANKRUPTCY.

Exhibit D is an abstract of such annual reports for the fiscal year ending June 30, 1880, as have been received from registers in bankruptcy.

Exhibit F is a general statement of appropriations placed under the Department of Justice for the fiscal year ending June 30, 1880.

Exhibit G is a statement showing items, amounts, causes of expenditure, and persons paid from the contingent fund for the fiscal year ending June 30, 1880.

Exhibit H is the report of the librarian of the receipt and distribution of the Statutes of the United States and Reports of the Supreme Court.

Exhibit J is the report of the Architect of the Capitol of the improvements and repairs to the court-house in the city of Washington during the last fiscal year.

APPROPRIATIONS.

Exhibits K, L, M, show the expenses of the United States courts for the fiscal years ending with the 30th of June, 1878, 1879, and 1880.

Exhibits K, L, show in detail for each judicial district the sums that were paid during the fiscal year ending June 30, 1880, out of appropriations for the fiscal years 1878 and 1879, to United States marshals, district attorneys, to clerks of United States Courts, to United States commissioners, to lessors of rooms for the use of the United States, and for miscellaneous expenses. These expenses had accrued in their respective fiscal years, but were not paid before, owing to a failure to present them in season, or to a want of funds for their payment when presented. Sums paid to each can be seen by examining exhibits as follows:

For expenses incurred in 1878, there was paid, during the last fiscal year, to

United States Marshals	$22,633 06
Attorneys	1,734 30
Clerks	297 66
Commissioners	2,599 50
Rents	100 00
Miscellaneous	4,777 19
	32,141 71

which will be seen by reference to Exhibit K.

For expenses incurred in 1879, there was paid, during the last fiscal year, to

United States Marshals	$36,591 08
Attorneys	59,432 19
Clerks	5,895 98
Commissioners	9,241 66
Miscellaneous	3,522 33
	114,683 24

which will be seen by reference to Exhibit L.

Exhibit M shows the amounts paid during the fiscal year ending June 30, 1880, to meet the expenses of the United States courts in that year.

This statement is arranged by judicial districts, and conforms in its details to each special appropriation for United States marshals, district attorneys, clerks of courts, jurors, witnesses, support of prisoners, commissioners, rents, and miscellaneous expenses.

UNITED STATES MARSHALS.

The appropriation approved June 16, 1880, provided $600,000 for the fees and expenses of the United States marshals for the fiscal year ending with June 30, 1880. Of this amount there was expended up to July 1, 1880, the sum of $321,300. Out of this appropriation were paid their fees and expenses of serving process alone, which they and their deputies had incurred, and accounts for nearly all of which had been rendered before the appropriation was made.

For fees and expenses of United States marshals incurred in the last year, there have been paid since July 1, 1880, the sum of $256,000, showing that at present there remains of the original appropriation $65,000, against which claims are still presented.

UNITED STATES ATTORNEYS.

To district attorneys there was paid $246,234.30 for the fiscal year ending with June 30, 1880. This includes payments to regular and special assistant attorneys.

Exhibit N shows who were these regular and special assistant attorneys, and the amounts paid to them.

The present method of compensating United States attorneys is principally by fees; and my experience leads me to recommend that they should be paid by salaries alone, which should not only compensate them for the performance of all duties now enjoined upon them by law, but also for such legal services in their respective districts as they might be required to render on behalf of the government or any of its lawful agents. The maximum compensation of the attorney at present is $6,000. This is derived from a small salary, not exceeding the sum usually of $200, and such amount by way of fees as is chargeable in cases to which the United States is a party. These fees are inconsiderable in individual cases; and the emoluments of the officer depend upon the number, and not upon the importance of the prosecutions undertaken in his district. It is believed that all these officers would prefer to be paid entirely by salaries, as not unfrequently it is unjustly suggested against them that prosecutions are encouraged for the sake of making fees. The officer should be entirely independent, and held to the performance of his duty by his own sense of justice and propriety and his official oath alone. It is not to be feared that under a system of salaries he will fail to initiate those prosecutions which are required for the enforcement of the laws of the United States; and he certainly will be exempted from any imputation that they are commenced by him with any selfish object. At a late session of Congress a bill was fully matured by which a graded system of salaries was formed by which the district attorneys were to be compensated, instead of being compensated as at present by fees. I regret extremely that the time in the session when this bill was fully matured was so late that it did not receive a full discussion and consideration. My predecessors have con-

curred with me in the recommendation now made, and I again urge it upon the attention of Congress. If this plan is adopted, salaries of assistant district attorneys in certain districts should also be provided for; and Congress itself should prescribe their number, compensation, and the districts in which they should be employed.

In this connection I call attention to a recommendation in my report for 1879, in the following words:

> There is also respectfully recommended to your favorable consideration the re-enactment of section 14 of the act approved August 16. 1856, which provides that United States attorneys may appoint substitute attorneys in certain cases to attend to the duties of the office when they cannot attend to them themselves, to be paid such fees and charges only as the United States attorneys would have been authorized by law to charge had they personally attended and performed the services, and the accounts of such substitutes to be sanctioned by the Attorney-General, under rules prescribed by him, upon payment of them to be made to the substitutes.
>
> While this law was operative it was found convenient and serviceable in various emergencies when the attorney was unable to attend the courts. The section referred to was enacted when the officers in question were under the control of the Secretary of the Interior; and, if revived, the authority then exercised by that officer should be conferred upon the Attorney-General.
>
> It reads as follows:
>
> "SEC. 14. *And be it further enacted*, That whenever from any cause it may be impossible for the district attorney to attend at court, it shall be his duty to see that a meet and proper person, learned in the law, residing as near the place where the court is held as possible, does attend to such business as may appertain to the duties of his office, and in all such cases the fees and charges to be paid shall be only such as the district attorney would have been authorized by law to charge had he personally attended and performed the service: *Provided, however*, That before any such substitution is sanctioned or payment made, the necessity thereof shall be shown to the satisfaction of the Secretary of the Interior."

CLERKS OF THE UNITED STATES COURTS.

To the clerks of the United States courts was paid, for the last fiscal year, $110,480.65, exclusive of the fees of the clerk of the courts of the United States in the District of Columbia.

This latter officer is not under the control of the Attorney-General in the manner with other clerks of United States courts. The reason for this exemption is not apparent, and is perhaps not equitable. I renew my statements of last year respecting this officer.

He is practically exempt from the restrictions legally thrown around clerks of the United States courts in other judicial districts, in not being required to make a return of the emoluments to the Department of Justice, or to submit the accounts of office expenses in any way to its inspection in the manner of other clerks.

You are respectfully referred to the sections 923, 924, 925, 926, 927, and 928 of the Revised Statutes, relating to the District of Columbia. It will be seen from these sections that the accounts of earnings and expenses of this officer are not subject, as are those of other clerks, to audit by the accounting officers of the Treasury, and it is understood that he never renders an account of his emoluments, as required by section 923, unless he has a balance due him from the Treasury. The whole matter should be revised and the clerk held responsible for his acts in the same manner and to the same extent as the clerk of any other United States court. In reference to the fact that the same person is sometimes clerk of both the circuit and district courts, I would respectfully suggest that where the same person is clerk of the circuit court and district courts, his maximum should not exceed $5,000, and he should be expressly debarred from holding any office in addition in the gift of the United States. There must be official restraint laid upon his time, and no in-

ducement open to him to neglect the duties of his office in order to be able to discharge those of any other business. Otherwise he has assistants furnished to him to do his official work while he may be employed elsewhere.

The appropriation for fees of clerks earned in the fiscal year 1880 is now exhausted.

UNITED STATES COMMISSIONERS.

These officers received $82,546.32 during the last fiscal year. It is in the power of these officers to increase or restrain litigation in the consideration of complaints, and it is perhaps not unjust to say that they sometimes lend a listening ear readily to uncertain statements which multiply the court expenses. My views were expressed in the last annual report as follows:

> It is impossible for the Attorney-General to exercise a control over them, and it is not easy to suggest a satisfactory remedy. I would suggest that, if Congress should fix the number of commissioners in each district, and prescribe a maximum which their emoluments should not exceed, to be allowed after proper return of those emoluments, and should also give authority to the judge of the district to disallow fees in cases where warrants were causelessly issued or unreasonably multiplied, much might be done to limit this expenditure.

JURORS AND WITNESSES AND SUPPORT OF PRISONERS.

There was paid for the same year, to jurors $427,355.75; to witnesses, $553,884.38; and for the support of prisoners, $230,541.40.

For miscellaneous expenses there was paid the sum of $289,997.44. This last amount includes transportation of prisoners out of the district to a designated penitentiary; expenses of bailiffs, criers, fuel, lights, stationery for courts, furniture, watchmen, janitors, holding seizures, jurors' meals, salaried officers summoned as witnesses, judges holding courts out of their districts, stenographic services, interpreters' fees, *post-mortem* examinations, storage, collecting evidence in United States cases, and other miscellaneous expenses necessary to holding courts.

The payments to jurors, witnesses, support of prisoners and miscellaneous expenses were, for the most part, advanced to the marshals for disbursement in response to requisitions.

WITNESSES.

Section 878, Revised Statutes, gives to persons indicted in the courts of the United States an advantage which few, if any, of the States confer. If any person so indicted makes affidavit setting forth that there are witnesses material to his defense, that he cannot safely go to trial without them, what he expects to prove by each of them, &c., and that sufficient means are not at his disposal to enable him to pay the expenses of such witnesses, the courts, or any judge thereof in vacation, may order such witnesses, if found within the limits of the district in which the court is held, or within one hundred miles of the place of trial, to be subpœnaed. In such case, the costs incurred by the service of process and fees of witnesses are paid in the same manner as similar costs and fees are paid when witnesses are subpœnaed on behalf of the United States. By this means large numbers of witnesses are often summoned on behalf of defendants whose presence is not necessary to a fair trial of the case. This privilege is one which entails a heavy expense upon the

government. It should be thoroughly guarded, and no witnesses should be allowed to be summoned merely for the purpose of attesting or attacking the credibility of other witnesses, which is one of the most frequent modes of multiplying such witnesses.

I recommend that the number which the United States shall be required to summon and pay for any defendant shall not exceed four witnesses (except in capital cases), and that only these should be summoned when it is clearly shown by affidavit that their testimony goes to the merits of the case.

RENTS.

Rents paid during the year amounted to $44,885.17.

While every reasonable effort has been made to reduce this expense, unexpected demands have arisen for new courts, with the attendant expenses, in consequence of new legislation.

EXPENSES OF UNITED STATES COURTS.

Experience shows that the annual expenses of United States courts do not vary far from $3,000,000. My estimate, therefore, for the year 1882 is $3,240,000.

Where an appropriation is subdivided so that that which is appropriated for one subdivision cannot be used for any other, the whole sum requisite must necessarily be larger. The appropriation being inflexible, even if under one head there may be a saving, it cannot be availed of to relieve the increased expenditure which may occur under another. It is necessary, therefore, to estimate for each item and not allow, as might properly be done, if the items were consolidated, for the occurrence of diminished expenses in one branch which would relieve increase in another.

TERMS OF COURT.

A considerable proportion of the business transacted in the United States courts in the southern district of Mississippi originates at and in the immediate vicinity of Vicksburg. The only place now fixed for the sessions of the United States courts is Jackson, where two terms of each court are annually held. I commend to the consideration of Congress the inquiry whether one of each of these terms might not properly be transferred to Vicksburg, if this could be done by a moderate expenditure.

DEFICIENCY.

The appropriation for fees of United States attorneys for 1880 is exhausted, and I think there will be needed for the deficiency a further appropriation of $25,000, which I would respectfully urge at an early day that outstanding claims may be paid.

A probable deficiency of $20,000 will be found in the fees due to clerks, for which an appropriation will be asked.

OPINIONS OF ATTORNEYS-GENERAL.

Provision was made by the act approved March 3, 1879 (20 Stat., 398), for the expense of preparing for publication an additional volume of the Opinions of the Attorneys-General. This act was amended by the act of June 15, 1880, c. 225, p. 236, by which it was provided that the sum thus appropriated should be applied to printing two additional volumes

(namely, the fifteenth and sixteenth); and it was further provided that this might be expended by the Attorney-General in such manner, notwithstanding section 1765 Revised Statutes, as would enable him to attain this object.

In conformity with these acts, I arranged for early publication of these volumes with Mr. A. J. Bentley, of this department. The fifteenth volume is already published; and the sixteenth is about one-third in print. It will include the opinions probably up to the 1st of December. The published opinions of the Attorneys-General will thus be complete up to the present time.

An appropriation has also been made of $1,000 for preparing and superintending the printing of a digest of these opinions, contained in volumes 1 to 16, inclusive. The preparation of this digest was also intrusted by me to Mr. Bentley, and its publication will follow soon after that of the sixteenth volume.

PROTECTION TO CIVIL OFFICERS.

I renew my recommendation that additional legislation should be had to protect executive civil officers of the government in the performance of their duties, and also against outrages committed upon them because they have faithfully performed them. The punishment now attached to a resistance of process is not commensurate with many offenses which have been committed upon and against these officers. There is no United States punishment for the murder of one of these officers while engaged in discharging his duties, or because he has discharged them. This is a matter which should not be left to the administration of justice in the State courts. A proper regard for the safety of the officer requires that the legislation should be ample, and cover all outrages, but especially the highest outrage upon his person.

ELECTION LAWS.

While I believe there has been a steady progress of sentiment in favor of the election laws of the United States, and of their honest execution, and while in certain portions of the Union the Congressional elections have been peacefully and honestly conducted where heretofore there has been just cause of complaint, yet information from many districts has satisfied me that the recent Congressional elections were there accompanied by such open violation of law, and such grave frauds, as to demand the attention of Congress and perhaps additional legislation.

Meetings assembled for peaceful advocacy of the merits of candidates have been repeatedly broken up entirely, or invaded by bands of armed ruffians. In some instances, public avowal has been made of the intention thus to act, and public invitation to that effect given, while no effort was made by the local authorities to prevent such outrages.

Violence and intimidation are not reported to have occurred, however, to the extent that prevailed in the elections of 1876 and 1878. This is to some extent due to the fact that voters have hesitated to expose themselves to the dangers they have heretofore encountered from these sources, and that these crimes have thus done their work, and also to the fact that those who have sought to defeat honest elections have found that they may do so more readily by allowing voters to deposit their ballots, and then defrauding them in the count.

The frauds as reported are various. Polls have not been opened

where it was known to the party controlling the opening of them that the majority against them was large. Votes have been thrown out on pretexts so flimsy as to be ridiculous. Ballot-box stuffing, in all its forms, is reported to have been resorted to, and the well-known "tissue-ballot" fraud has been prominent.

A great proportion of these frauds have been committed by the officers of election, charged with its proper conduct and with honestly certifying its result, or with their connivance and concurrence.

I have deemed it my duty to call the attention of the executive officers of the United States to the necessity of a vigorous enforcement of its election laws, both by endeavoring to prevent their violation, and also by bringing to justice those who might infringe them. I believe they will make resolute efforts to do so. It will be my effort fairly, but decidedly, to do all in my power to vindicate the authority of the laws of the United States intended to preserve the purity of elections in the same way that its other laws are maintained.

No appropriation was made by Congress for the payment of general and special deputy marshals at elections. Section 2031, Revised Statutes, provides for compensation for these deputies at the rate of five dollars per day, when actually on duty. It was the duty of the marshal to appoint special deputies, when properly requested under section 2021, if suitable persons could be found to perform the duty, notwithstanding no appropriation was made for their payment. This duty was performed by the marshals, and the services in question, in pursuance of law, have been rendered. I recommend that a sufficient appropriation be made for the payment of these services. The exact amount for this purpose I am not able at this moment to state, as accounts have not been rendered for the reason that it was understood that they could not be paid. At a later stage in the session I shall be prepared to state what amount of money will be required.

If the present system is to continue I recommend that the provisions of section 2021, Revised Statutes, and the following sections, be extended to embrace all polls at which a member of Congress is voted for. The legislation of Congress, by act of February 28, 1871, had relation to the prevention of frauds at polls in cities or towns of twenty thousand inhabitants or upwards, and is found in sections 2011, 2026. On June 10, 1872, this legislation was extended to counties or parishes in Congressional districts to this extent, that supervisors of election might be there appointed, but without authority to make arrests, or to perform duties other than to be in the immediate presence of the officers holding the election, and to witness all their proceedings, including the counting of the votes and the making a return thereof.

The constitutionality of this legislation being fully established by the decisions to which I have called attention in the earlier part of this report, its extension is a question of expediency only. The operation of the present system has been in every respect beneficial where it has been possible to enforce it effectually. It has prevented many frauds in voting and in canvassing the votes; and any incompleteness in its operation has been due to the hostility which has been exhibited toward it by individuals and State officers.

I respectfully submit to the consideration of Congress whether the time has not now arrived when an election law should be passed which shall take into the control of United States officials all elections for members of Congress.

The present law seeks to avail itself of the officers and agencies of the

State in these elections, Congress having power alike to make entirely new regulations, or to alter or modify the regulations made by the State. It imposes duties upon the State officers of elections, penalties for breach of duty or the perpetration of frauds by them in the Congressional election, and provides for the attendance of its own officers to prevent frauds and see that the elections are legally and fairly conducted. The provisions as they now exist are clearly within the supervisory power of Congress over such elections. The duties to be performed in the election of a member of Congress are owed to the United States as well as to the State, and their violation is an offense against the United States which Congress may rightfully inhibit and punish. (Ex parte Siebold, 100 U. S. reports, 371.)

But while this is the case, the officials who conduct the elections are still the officers of the State. In accepting them for its own purposes the United States is necessarily compelled to accept them as they are, although they may be men who show themselves, or have heretofore shown themselves, ready to commit or connive at fraud. The detection of fraud, when committed by such officials, is attended by the greatest and most serious difficulty. The ballot-box is in their control; and after the election it is kept in their hands. The utmost vigilance of supervisors often cannot detect the stuffing it with false votes, and efforts are constantly made to make the supervision useless and defeat its objects. Nor can supervisors control decisions when made by these officers in the reception or counting of the votes.

If proper investigation shall satisfy Congress (and my mind is led to the conclusion that it may reach this result by the more limited information which I possess) that the most serious difficulty with these elections arises from the dishonesty of State officials who administer the laws in certain parts of the Union, the remedy is simple and decisive. It is to provide a Congressional election law which shall be administered by United States officials to be fairly selected (as the supervisors of election are now) from both political parties. Such officers will be under the direct control of the United States, amenable solely to its laws, and owing no legal duty but to them; and as the peace of the United States must be kept wherever it has a duty to perform, they will keep the peace and be sustained by the marshal in so doing and resist the intrusion of any one.

It will be, of course, for Congress to determine whether the recent election, and those which have preceded it, have demonstrated that the State officials cannot be relied upon honestly to perform their duty in so large a portion of the Union as to call for the exercise of this power of Congress. The only objection that can be made to such a law is that it will be attended by additional expense; but, when we consider that a free and honest ballot is a fundamental right, and that fraud in any section of the Union is not only the greatest wrong against the people of that section, but equally against the people of all other sections, to whose interests an honestly-elected Congress is vital, the limited expense is a matter of trifling consideration.

To the constitutionality of a law which takes entirely into control of the United States, through its officers, the election of members of Congress no objection can exist. Indeed, in the arguments that were made in the cases heretofore cited upon the election laws as they now exist, the principal objection made to them was that they imposed upon State officials duties which they were not required by State law to perform, and fixed penalties for their violation. The arguments conceded that if the United States had taken, through its officers, the entire conduct

of these elections, it might properly have done so, and might have imposed proper penalties upon all officials who should violate any provisions of law in relation thereto. Nor upon the point that the United States could itself have provided for holding the Congressional elections by its own officers was there understood to be any difference of opinion in the court which decided the case, although the minority held that the law in its present form was not constitutional. Their dissenting opinion bases its objection to the present law upon two grounds: first, that it was not competent for Congress to punish a State official for the manner in which he discharged duties imposed upon him by the laws of the State, or to subject him, in the performance of such duties, to the supervision and control of others and punish him for resisting their interference; and, second, that it was not competent for Congress to make the exercise of its punitive power dependent upon the legislation of the States, Congress having fixed a penalty for a violation of duty prescribed by a law of the State in regard to an election at which a Representative in Congress was to be chosen. But the same opinion contends that the power given by virtue of that clause of the Constitution which declares that "the times, places, and manner of holding elections for Senators and Representatives shall be prescribed in each State by the legislature thereof; but the Congress may at any time by law make or alter such regulations, except as to the places of choosing Senators," can be carried into effect solely by the Federal Government, and that the Federal power thus exercised, if promoted by punitive sanction, should be through Federal officers and agents, for the reason that the national government has power to carry into effect, through its own proper departments, the legislative, executive, and judicial, all the rights conferred upon it by the Constitution.

Regulations as to the manner of holding elections extend to the designation of the mode in which the will of the voters should be expressed or ascertained, and the power of Congress is complete over the whole subject, except that it is not authorized to determine who shall participate in the election, or what shall be the qualifications of voters. These are matters the regulation of which rests exclusively with the State, under the restrictions which are found in the provision that "the electors of Representatives in Congress shall have the qualifications required of electors of the most numerous branch of the State legislature," and the provision that "the right of citizens to vote shall not be denied or abridged by the United States, or by any State, on account of race, color, or previous condition of servitude."

PRISONERS OF THE UNITED STATES.

Where prisoners have been sentenced to long terms, and there was no suitable penitentiary in the district where they were convicted, they have principally been sent to the penitentiaries at Detroit, Mich., or Albany, N. Y. The proper treatment, health, and security of the prisoners have been regarded in the selection of places of confinement. Contracts have heretofore been made with the penitentiaries named, by which the annual expenditure incurred by the United States has been that of the transportation of the prisoner, with an additional suit of clothes and a small sum of money which is given by statute at the conclusion of his term. There has also been a contract made with the penitentiary at Chester, Ill., by which prisoners of the United States are received without cost to the government. The State penitentiary at Nashville, Tenn., has expressed a willingness to enter into a similar con-

tract whereby prisoners will be received without cost. A large saving has been made over the expenditures of former years, but great care has been taken that in no instance shall such economy be attended with any want of consideration of the proper comfort or health of the prisoner. A system of regular inspection has been instituted whereby prisoners are visited as often as once in six months, with a view of ascertaining from personal observation their treatment and their wants. These visits are made by a representative of this department, and he has personal interviews with the prisoners, individually and alone, in order to determine whether there were just grounds of complaint of the discipline to which they were subjected. I have every reason to believe that he has carefully and humanely performed his duty in the matter. He has also been instructed to bring, through this department, to the attention of the President, consideration of any case which seems to require executive clemency toward sick or friendless prisoners who might otherwise have no means of communicating with the pardoning power. A system of forms has been prepared by this officer by which all jails and prisons are required to furnish monthly reports with full particulars as to prisoners of the United States in their charge.

The cost of transporting United States prisoners from Arizona and New Mexico to an available penitentiary in the States, although not greater than keeping them in those Territories, is still very heavy. From the experience of the department in this matter, it is thought advisable to submit to Congress the propriety of building a United States penitentiary at a suitable place in either Arizona or New Mexico for the imprisonment of United States prisoners from those Territories. This matter is earnestly recommended to your favorable consideration.

INSANE CONVICTS.

By the act of June 23, 1874, the Attorney-General was authorized to contract with State asylums for the care and custody of any person who should become and be insane while under the sentence of a United States court. The law upon this subject is too restricted to allow those provisions for the insane which humanity requires. The contract and payment for such care beyond the term of each imprisonment is strictly forbidden, and for this reason local institutions decline to receive prisoners who were convicted in another State than that wherein such institution is situated. Additional legislation is required to enable the Attorney-General to return such prisoners, after the expiration of their sentences, to their friends or the place of conviction, and to properly compensate State asylums until this can be done. Sometimes, such prisoners are utterly friendless; and authority should be given to the Attorney-General to take proper care of them until they can be provided for by humane persons, or by some public institution. Several claims exist where institutions have continued the treatment of such prisoners beyond the term of imprisonment, when they could not, consistently with humanity, discharge them, although they were informed of the limitation as to payment which the law imposed upon this department. These claims ought to be paid by the United States, as they have arisen from humanity towards its prisoners; and if any legislation such as I have adverted to should be made, it should include these claims.

SOLICITOR OF THE TREASURY.

I append, herewith, the annual report of the Solicitor of the Treasury exhibiting the amount, character, and results of the litigation under his direction for the fiscal year ending June 30, 1880. (See Exhibit O.)

UNITED STATES JAIL IN THE DISTRICT OF COLUMBIA.

The report required by law of the warden of the United States jail in the District of Columbia shows that discipline has been maintained by moral influences instead of resorting to physical force. While discipline has thus been enforced, the prisoners have been kindly treated, and their reformation is a further important purpose kept in view. Every encouragement has been given to Christian people, and to members of religious institutions in the city, to visit prisoners for the purpose of contributing to their religious and moral improvement.

The warden enlarges upon the benefits arising from the separate system of confinement, which he considers, in every respect, preferable to any other system in a jail like this. The health of the prisoners has generally been good. Two cases of small-pox caused much anxiety, and the utmost care was exercised to prevent the spread of this disease. Malarial diseases have prevailed to a greater extent than ever before, but all such cases have yielded readily to medical treatment, and the general health of the prisoners has been quite as satisfactory as heretofore.

Attention is called to the report of Dr. Young, jail physician, for further information regarding the sanitary matters connected with the jail. The warden deems the removal of the small-pox hospital—a frame structure inadequate in many respects for the purposes demanded, and only reached by a road through the jail yard—necessary, and asks that a building more suitable for such purposes be constructed in a more isolated locality.

The jail building, outbuildings, fences, and grounds have been kept in good condition and repairs, and a new fence erected on the east line of the premises. Painting, glazing, and repairs on buildings, fences, boilers, furnaces, steam-pipes, &c., entailed an expenditure of $1,312.46. Seventy-seven convicts were transported to Albany at an expense of $1,949.82. There were 41 boys sent to the Reform School of the District of Columbia.

The annual salaries of physicians, guards, engineers, &c., have amounted to $35,400. The other expenses connected with the jail are given in detail in the warden's report. The daily average number of prisoners incarcerated during the year was 194. The total number of prisoners confined in the jail during the year was 2,030, of whom 1,810 were males, and 220 were females. Of this number 14 were pardoned by the President of the United States, 5 were pardoned by the Commissioners of the District of Columbia, 41 boys were sent to the Reform School, 77 convicts were sent to the penitentiary at Albany, one was executed, two died, three were sent to the U. S. hospital for the insane of the District of Columbia, and 1,699 were discharged, leaving in the jail at the close of the year 188 prisoners, of whom 170 were males and 18 were females.

A classified account of the various offenres charged against the prisoners committed to this jail during the year is given in the warden's report. (See Exhibit P.)

THE REFORM SCHOOL OF THE DISTRICT OF COLUMBIA.

The report of the president of the board of trustees of the Reform School for the fiscal year ending June 30, 1880, is satisfactory, and shows that the school is better disciplined and officered than ever before.

At the close of the last fiscal year 157 boys remained in the school. There were committed during the year 63, making the whole number under its care and instruction 220. Of this number 53 were discharged

by the board, having deserved it by their good conduct, and eight were absent without leave. Of those received during the year 22 were committed by the president of the board of trustees, 7 by the supreme court of the District of Columbia, and 34 by the police court. With the exception of some few slight attacks of malarial trouble there has been no sickness in the school during the year. For statistics as to age, parentage, and other details, reference is made to the report of the superintendent of the school.

The school is organized under the act of Congress approved the 25th day of July, 1866, and has therefore been in existence about 14 years, during which time there have been received into it 683 boys. Of this number but 5 have died.

Preparations were made for gardening upon a more extensive scale than heretofore, and the school has been abundantly supplied with all the vegetables and fruits that were required.

A great deal of grading and filling up have been accomplished, and many shade and ornamental trees planted, all of which are growing finely, and will in a few years make the grounds surrounding the buildings beautiful and attractive. During the year many repairs and improvements have been made to the buildings, and a laundry and blacksmith shop erected.

The act of Congress approved June 4, 1880, provides that one of the Commissioners of the District of Columbia shall be selected to act as a trustee of the school, and Maj. Thomas P. Morgan was selected as such trustee. The same act empowers the trustees of the school to use of the money due them by the trustees of Jay Cooke & Co., the sum of $8,500, to purchase the remainder of the Peter farm. The purchase has accordingly been effected.

The appropriation for the fiscal year 1881 for the support of the school for all purposes was $25,000. This sum will be inadequate and a deficiency will be asked of Congress.

The receipts of the school for the year were :

Appropriation by Congress	$20,000 00
Received from the District of Columbia on account of support of boys	16,967 98
Sundry receipts of the school for chair-work, farm produce, &c	953 70
Total	37,921 68

The report of the treasurer of this institution gives in detail the manner in which this money has been expended.

The president of the board again directs the attention of Congress to the urgent necessity for more family buildings, together with workshops. It appears that the school is filled to its utmost capacity, and is constantly compelled to refuse applications for admission, in consequence of which, many boys who would have found a good home at the school were sent to the District jail and work-house. At an estimated expense of $8,000 each, two family buildings could be erected. The laundry building affords ample steam-power to run all machinery required in the shops. It is estimated that a further expense of $2,500 would erect buildings and purchase machinery and tools for this purpose. With these facilities, the revenue of the school would be largely increased.

The addition of the Peter farm to the school necessitates the erection of further fencing. It is the intention of the trustees to add to the industries of the school the manufacture of brooms and willow-ware. The affairs of this important institution have been conducted efficiently and economically, and I earnestly commend its wants to the careful consideration of Congress. (See Exhibit Q.)

UTAH.

The persistent refusal of the Territorial legislature of Utah to make the appropriation which all other Territories make for its own courts demands the serious attention of Congress. It is obvious that Congress cannot permit the Territorial justice to fail, and the large class of crimes which are the proper subjects of Territorial legislation to go unpunished; but a system should be adopted which would compel the Territory to meet the expenditure which the legislation of Congress has treated as a proper charge upon it.

Very respectfully,

CHAS. DEVENS,
Attorney-General.

EXHIBIT A.—*Statement showing the number of civil suits to which the United States was a party, pending in the district and circuit courts of the United States July* 1, 1880, *with the number terminated during the fiscal year ending June* 30, 1880.

Districts.	Number pending July 1, 1880.	Number terminated during the fiscal year ending June 30, 1880.				Appealed from district court to circuit court.	Appealed from circuit court to Supreme Court.
		Judgment for the United States.	Judgment for the defendant.	Dismissed or discontinued.	Total.		
Alabama, northern district	206	126	1	74	201	.....	.....
Alabama, middle district	20	1	.....	4	5	.....	.....
Alabama, southern district	22	8	1	10	19	.....	.....
Arkansas, eastern district	3	12	.....	.....	12	.....	.....
Arkansas, western district	9	11	2	7	20	.....	.....
California	68	19	8	31	58	.....	.....
Colorado	12	1	.....	2	3	1	.....
Connecticut	14	3	2	4	9	.....	3
Delaware	8	2	.....	.....	2	.....	.....
Florida, northern district	69	23	1	4	28	.....	6
Florida, southern district	.....	3	3	1	7	2	.....
Georgia, northern district	43	27	14	32	73	.....	.....
Georgia, southern district	11	11	.....	7	18	.....	.....
Illinois, northern district	41	28	1	8	37	.....	.....
Illinois, southern district	20	4	1	.....	5	1	.....
Indiana	11	5	1	4	10	.....	.....
Iowa	18	8	2	.....	10	.....	1
Kansas	17	2	1	4	7	.....	.....
Kentucky	70	41	6	29	76	.....	.....
Louisiana	335	13	122	124	259	1	3
Maine	2	2	1	3	6	.....	1
Maryland	39	19	2	12	33	1	1
Massachusetts	264	30	.....	14	44	3	2
Michigan, eastern district	39	1	.....	7	8	.....	.....
Michigan, western district	19	3	.....	4	7	.....	.....
Minnesota	98	10	1	10	21	.....	.....
Mississippi, northern district	3	4	.....	3	7	.....	.....
Mississippi, southern district	2	9	.....	1	10	.....	.....
Missouri, eastern district	45	21	.....	3	24	.....	2
Missouri, western district	7	3	.....	8	11	.....	.....
Nebraska	6	1	.....	1	2	.....	.....
Nevada	4	1	.....	.....	1	.....	.....
New Hampshire	1	3	1	2	6	.....	1
New Jersey	16	6	2	11	19	.....	1
New York, northern district	19	1	1	5	7	.....	.....
New York, southern district	780	56	9	360	425	3	1
New York, eastern district	597	35	3	29	67	.....	.....
North Carolina, eastern district	60	15	25	13	53	.....	.....
North Carolina, western district	129	111	.....	33	144	.....	.....
Ohio, northern district	4	14	.....	.....	14	.....	.....
Ohio, southern district	48	22	3	.....	25	.....	1
Oregon	6	13	5	1	19	.....	.....
Pennsylvania, eastern district	465	65	18	114	197	.....	.....
Pennsylvania, western district	59	6	.....	6	12	.....	.....
Rhode Island	2	.....	.....	.....	.....	.....	.....
South Carolina	2	3	.....	4	7	.....	.....
Tennessee, eastern district	28	32	3	9	44	.....	.....
Tennessee, middle district	53	146	.....	1	147	.....	.....
Tennessee, western district	12	18	2	14	34	.....	.....
Texas, northern district	3	2	.....	.....	2	.....	.....
Texas, eastern district	7	5	.....	1	6	.....	.....
Texas, western district	10	41	1	4	46	.....	.....
Vermont	8	3	.....	.....	3	.....	.....
Virginia, eastern district	32	4	4	1	9	.....	.....
Virginia, western district	34	32	.....	6	38	.....	.....
West Virginia	98	8	.....	3	11	.....	.....
Wisconsin, eastern district	13	6	3	6	15	.....	1
Wisconsin, western district	18	6	.....	1	7	.....	.....
Arizona	9	.....	.....	2	2	.....	.....
Dakota	9	7	.....	.....	7	.....	.....
District of Columbia	41	1	.....	1	2	.....	.....
Idaho*	.....	.....	.....	.....	.....	.....	.....
Montana	4	2	5	8	15	.....	.....
New Mexico	8	.....	.....	.....	.....	.....	.....
Utah	2	1	.....	3	4	.....	.....
Washington	.....	2	.....	.....	2	.....	.....
Wyoming	8	.....	.....	1	1	.....	.....
Total	4,110	1,118	255	1,050	2,423	12	24

*No reports received.

EXHIBIT B.—*Statement showing the number of criminal prosecutions pending in the circuit and district courts of the United States on July 1, 1880, with the number terminated during the fiscal year ending June 30, 1880.*

Districts.	Number pending July 1, 1880.										Number terminated during the fiscal year ending June 30, 1880.										
											Customs.				Internal revenue.				Post-office.			
	Customs prosecutions.	Internal-revenue prosecutions.	Post-office prosecutions.	Prosecutions under enforcement act.	Prosecutions under naturalization laws.	Prosecutions under intercourse laws.	Prosecutions under pension laws.	Prosecutions for embezzlement.	Miscellaneous prosecutions.	Total.	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.
Alabama, northern district	.....	223	3	.....	.....	.....	.....	3	30	259	.....	.....	.....	.....	81	28	116	225	5	.....	2	7
Alabama, middle district	.....	27	1	27	.....	.....	.....	.....	31	86	.....	.....	.....	.....	25	8	23	56	5	1	2	8
Alabama, southern district	2	1	1	1	.....	.....	.....	.....	38	43	.....	.....	.....	.....	19	3	27	49	2	.....	.....	2
Arkansas, eastern district	.....	13	.....	.....	.....	.....	.....	1	.....	14	.....	.....	.....	.....	18	.....	12	30	4	1	1	6
Arkansas, western district	.....	5	.....	.....	.....	3	.....	.....	21	29	.....	.....	.....	.....	45	3	8	56	4	.....	.....	4
California	3	52	4	.....	.....	.....	.....	1	21	81	4	3	1	8	141	32	108	281	2	2	.....	4
Colorado	.....	1	1	.....	.....	.....	.....	3	1	6	.....	.....	.....	.....	3	1	1	5	8	1	2	11
Connecticut	.....	8	3	.....	1	.....	5	.....	.....	17	.....	.....	.....	.....	8	1	21	30	9	1	9	19
Delaware	.....	36	.....	.....	.....	.....	.....	.....	.....	36	.....	.....	.....	.....	4	.....	4	8	.....	.....	.....	.....
Florida, northern district	.....	46	3	47	.....	.....	.....	2	40	138	.....	.....	.....	.....	3	8	1	12	1	.....	1	2
Florida, southern district	3	1	2	.....	.....	.....	.....	.....	.....	6	2	.....	.....	2	2	.....	.....	2	.....	.....	.....	.....
Georgia, northern district	.....	105	4	7	.....	.....	2	3	13	134	.....	.....	.....	.....	91	52	69	212	.....	.....	1	1
Georgia, southern district	3	30	7	.....	.....	.....	.....	1	3	44	.....	.....	.....	.....	4	3	13	20	.....	.....	.....	.....
Illinois, northern district	.....	30	1	.....	.....	.....	4	.....	19	54	.....	.....	.....	.....	36	4	39	79	9	.....	5	14
Illinois, southern district	.....	36	1	.....	.....	.....	6	1	13	57	.....	.....	.....	.....	98	18	6	122	12	4	5	21
Indiana	.....	54	2	.....	.....	.....	15	6	23	100	.....	.....	.....	.....	37	4	62	103	10	2	5	17
Iowa	.....	128	12	.....	.....	.....	.....	.....	25	165	.....	.....	.....	.....	88	15	26	129	.....	.....	.....	.....
Kansas	.....	43	3	.....	.....	.....	.....	1	27	74	.....	.....	.....	.....	15	3	17	35	3	.....	3	6
Kentucky	3	157	.....	.....	.....	.....	.....	.....	3	163	.....	.....	.....	.....	112	16	62	190	4	.....	.....	4
Louisiana	5	129	12	102	.....	3	11	12	61	335	.....	.....	.....	.....	9	30	80	119	1	2	.....	3
Maine	.....	2	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	2	2	11	1	34	46	5	2	3	10
Maryland	.....	14	2	14	.....	1	2	1	6	40	3	3	.....	6	10	2	5	17	5	1	.....	6
Massachusetts	16	101	14	.....	.....	.....	5	6	69	211	6	3	.....	9	36	5	13	54	9	.....	1	10
Michigan, eastern district	9	10	4	.....	.....	.....	.....	.....	16	39	19	1	4	24	23	.....	14	37	1	.....	.....	1
Michigan, western district	.....	16	1	.....	.....	.....	1	1	26	45	2	.....	.....	2	1	1	4	6	.....	1	.....	1
Minnesota	.....	7	.....	.....	.....	3	.....	.....	6	16	.....	.....	.....	.....	5	1	3	9	2	.....	1	3
Mississippi, northern district	.....	85	.....	.....	.....	.....	.....	.....	3	88	.....	.....	.....	.....	45	14	22	81	2	.....	.....	2
Mississippi, southern district	.....	19	3	.....	.....	.....	.....	.....	8	30	.....	.....	.....	.....	33	5	1	39	1	.....	1	2
Missouri, eastern district	.....	63	4	.....	.....	.....	.....	.....	18	85	.....	.....	.....	.....	99	1	61	161	4	.....	.....	4
Missouri, western district	.....	48	5	.....	.....	.....	4	1	4	62	.....	.....	.....	.....	102	12	11	125	12	7	3	22
Nebraska	.....	3	4	.....	.....	.....	.....	.....	3	10	.....	.....	.....	.....	25	1	11	37	6	1	.....	7

EXHIBIT B.—*Statement showing the number of criminal prosecutions pending in the circuit and district courts of the United States, &c.*—Continued.

Districts.	Number pending July 1, 1880.										Number terminated during the fiscal year ending June 30, 1880.											
											Customs.				Internal revenue.				Post-office.			
	Customs prosecutions.	Internal-revenue prosecutions.	Post-office prosecutions.	Prosecutions under enforcement act.	Prosecutions under naturalization laws.	Prosecutions under intercourse laws.	Prosecutions under pension laws.	Prosecutions for embezzlement.	Miscellaneous prosecutions.	Total.	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.
Nevada	.....	4	1	.....	1	3	.....	.....	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire	.....	5	1	.....	.....	.....	.....	.....	3	9	.....	.....	.....	.....	.....	.....	9	9	1	.....	4	5
New Jersey	2	153	2	.....	.....	.....	.....	9	12	178	16	.....	1	17	19	5	9	33	9	2	1	12
New York, northern district	30	77	26	.....	.....	.....	7	.....	35	175	6	.....	6	12	70	7	31	108	12	.....	2	14
New York, southern district	21	88	21	.....	.....	.....	1	.....	51	182	3	.....	14	17	56	.....	152	208	9	.....	16	25
New York, eastern district	.....	56	1	.....	.....	.....	.....	.....	14	71	.....	.....	.....	.....	5	1	59	65	.....	1	1	2
North Carolina, eastern district	.....	125	2	.....	.....	.....	.....	.....	29	156	.....	.....	.....	.....	66	18	35	119	1	1	.....	2
North Carolina, western district	.....	309	4	.....	.....	.....	1	1	17	332	.....	.....	.....	.....	382	108	188	678	2	1	2	5
Ohio, northern district	.....	13	8	.....	.....	.....	.....	.....	6	27	.....	.....	.....	.....	50	1	.....	51	9	1	2	12
Ohio, southern district	.....	34	11	.....	.....	.....	2	1	24	72	.....	.....	.....	.....	47	4	24	75	17	1	4	22
Oregon	.....	5	.....	.....	.....	4	.....	.....	8	17	.....	.....	.....	.....	15	2	.....	17	1	1	.....	2
Pennsylvania, eastern district	.....	60	12	.....	.....	.....	3	3	22	100	.....	.....	2	2	28	2	27	57	11	2	16	29
Pennsylvania, western district	.....	87	20	.....	.....	.....	10	8	24	149	.....	.....	.....	.....	5	2	6	13	7	2	.....	9
Rhode Island	.....	16	.....	.....	.....	.....	.....	.....	.....	16	.....	.....	.....	.....	1	.....	2	3	.....	.....	.....	.....
South Carolina	.....	119	8	64	.....	.....	.....	.....	18	209	.....	.....	.....	.....	41	72	119	232	1	2	.....	3
Tennessee, eastern district	.....	239	.....	.....	.....	.....	3	.....	26	268	.....	.....	.....	.....	436	20	35	491	1	.....	1	2
Tennessee, middle district	.....	269	3	2	.....	.....	.....	2	22	298	.....	.....	.....	.....	274	48	49	371	2	.....	.....	2
Tennessee, western district	.....	25	2	.....	.....	.....	.....	2	11	40	.....	.....	.....	.....	9	9	1	19	1	3	1	5
Texas, northern district	.....	82	16	2	.....	.....	.....	10	27	137	.....	.....	.....	.....	10	7	13	30	13	6	12	31
Texas, eastern district	.....	119	11	3	.....	.....	.....	1	.....	134	.....	.....	.....	.....	24	1	70	95	5	5	3	13
Texas, western district	94	293	9	.....	.....	.....	.....	5	26	427	23	7	10	40	46	10	59	115	7	1	1	9
Vermont	5	16	3	.....	.....	.....	1	.....	.....	25	6	.....	.....	6	6	.....	1	7	.....	.....	.....	.....
Virginia, eastern district	.....	12	4	.....	.....	.....	.....	.....	20	36	.....	.....	.....	.....	17	4	10	31	1	1	.....	2
Virginia, western district	.....	320	.....	.....	.....	.....	4	.....	11	335	.....	.....	.....	.....	304	54	64	422	5	.....	.....	5
West Virginia	.....	766	20	.....	.....	.....	.....	.....	68	854	.....	.....	.....	.....	311	21	259	591	7	1	5	13
Wisconsin, eastern district	.....	1	1	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	3	.....	4	7	1	.....	.....	1
Wisconsin, western district	.....	4	2	.....	.....	1	.....	.....	29	36	.....	.....	.....	.....	6	.....	1	7	1	.....	.....	1
Arizona	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dakota	1	74	2	.....	.....	.....	.....	22	55	154	2	.....	.....	2	61	.....	26	87	3	2	5	10
District of Columbia	.....	1	10	.....	.....	.....	6	.....	84	101	.....	.....	.....	.....	.....	1	.....	1	2	.....	1	3
Idaho*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montana	.....	.....	.....	.....	.....	.....	.....	.....	20	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

New Mexico	1	24	10	.....	.....	1	.....	1	14	51	.....	.....	1	1	4	14	5	23	1	.....	.....	1
Utah	.....	7	.....	.....	.....	.....	.....	.....	18	25	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....
Washington	.....	.....	.....	.....	.....	5	.....	.....	20	25	.....	1	1	2	.....	.....	.....	.....	.....	.....	.....	.....
Wyoming	.....	.....	2	.....	.....	.....	.....	.....	5	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2
Total of each class	198	4,896	309	269	2	24	93	108	1,247	7,146	92	18	42	152	3,525	683	2,133	6,341	256	60	123	439

* No reports received.

EXHIBIT B.—*Statement showing the number of criminal prosecutions pending in the district and circuit courts of the United States, &c.*—Continued.

Districts.	Number terminated during the fiscal year ending June 30, 1880.																							
	Enforcement acts.				Naturalization laws.				Intercourse laws.				Pension laws.				Embezzlement.				Miscellaneous.			
	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.	Convictions.	Acquittals.	Nolled, discontinued, or quashed.	Total.
Alabama, northern district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	1	.....	1	2	.....	.....	.....	.....	20	1	18	39
Alabama, middle district	....	....	4	4	....	....	....	....	.....	.....	.....	.....	.....	.....	2	2	.....	.....	.....	.....	67	17	26	110
Alabama, southern district	....	....	6	6	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	37	2	1	40
Arkansas, eastern district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	10	.....	.....	10
Arkansas, western district	....	....	....	....	....	....	....	....	75	10	4	89	.....	.....	.....	.....	.....	.....	.....	.....	84	30	32	146
California	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	8	6	10	24
Colorado	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	3	.....	1	2	3
Connecticut	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	1	10	15
Delaware	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Florida, northern district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	7	6	19
Florida, southern district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	2
Georgia, northern district	....	1	4	5	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	14	7	21
Georgia, southern district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois, northern district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	2	.....	2	4	1	.....	.....	1	5	4	12	21
Illinois, southern district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	2	.....	.....	2	.....	.....	.....	.....	11	3	22	36
Indiana	....	....	....	....	....	....	....	....	.....	.....	.....	.....	8	4	.....	12	2	3	1	6	27	9	12	48
Iowa	....	....	....	....	....	....	....	....	.....	.....	.....	.....	1	2	1	4	.....	.....	.....	.....	13	5	5	23
Kansas	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	4	10	24
Kentucky	....	....	....	....	....	....	....	....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	8	1	8	17
Louisiana	....	....	6	6	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	39	9	49
Maine	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	1	2	9
Maryland	....	....	12	12	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25	9	3	37
Massachusetts	....	....	....	....	....	....	....	....	.....	.....	.....	.....	2	.....	.....	2	2	.....	.....	2	58	13	34	105
Michigan, eastern district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	2	2	12
Michigan, western district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	10	8	10	28
Minnesota	....	....	....	....	....	....	....	....	5	.....	.....	5	.....	.....	.....	.....	1	.....	.....	1	7	1	1	9
Mississippi, northern district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	4	1	6	11
Mississippi, southern district	....	....	1	1	....	....	....	....	.....	.....	.....	.....	2	.....	.....	2	.....	.....	.....	.....	7	1	.....	8
Missouri, eastern district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26	6	16	48
Missouri, western district	....	....	....	....	....	....	....	....	.....	.....	.....	.....	1	1	.....	2	.....	.....	.....	.....	12	3	2	17

Nebraska									3		2	5							2	2	5		3	8
Nevada	1			1					1			1										1		1
New Hampshire															1	1			1	1	2	1	3	6
New Jersey																					14	2	2	18
New York, northern district													2	1	2	5					22	4	55	81
New York, southern district											2	2	3		1	4					29	4	103	136
New York, eastern district							4	4													10	1	17	28
North Carolina, eastern district																					1	3	1	5
North Carolina, western district														1		1							1	1
Ohio, northern district																					12	2	2	16
Ohio, southern district													1	2	1	4			1	1	12	7	15	34
Oregon									26			26									22	3	1	26
Pennsylvania, eastern district													1	1	2	4			2	2	22	8	36	66
Pennsylvania, western district			1	1										4	5	9					11	2	1	14
Rhode Island																								
South Carolina			25	25																	14	4	8	26
Tennessee, eastern district													1			1					5	1	4	10
Tennessee, middle district																					2			2
Tennessee, western district													1			1					5	2	3	10
Texas, northern district																			4	4	5	9	13	27
Texas, eastern district		1	1	2																	2	1	4	7
Texas, western district																		1	2	3	7	7	43	57
Vermont																								
Virginia, eastern district			4	4																	15		20	35
Virginia, western district																	2			2	3		4	7
West Virginia																					13	2	6	21
Wisconsin, eastern district													3		1	4		1		1	5	3	3	11
Wisconsin, western district									6	1	1	8									1	1		2
Arizona																					1	1	3	5
Dakota																		2	6	8	27	13	39	79
District of Columbia													1		1	2					156	42	42	240
*Idaho																								
Montana																						6	6	12
New Mexico			3	3						1		1										7	4	11
Utah							1	1													17	7	6	30
Washington									6	2	11	19									19	1	4	24
Wyoming																					5	1	2	8
Total of each class	1	2	67	70			5	5	122	14	20	156	35	16	20	71	10	10	20	40	940	335	720	1,995

*No reports received.

EXHIBITS A and B.—*Statement of the amounts arising from civil suits to which the United States was a party and from criminal prosecutions in the circuit and district courts of the United States during the fiscal year ending June* 30, 1880.

[Supplement.]

Districts.	Amount of judgments obtained during the year in favor of the United States.	Amount of fines, forfeitures, and penalties imposed during the year.	Amount realized from judgments obtained during the year.	Amount realized on fines, forfeitures, and penalties imposed during the year.	Amount realized on fines, forfeitures, and penalties imposed in former years.	Amount realized on judgments obtained in former years.	Amount otherwise realized during the year and not included in the foregoing.
Alabama, northern district	$12,359 19	$8,444 00	$229 87	$25 00	.....	.....	$4,515 46
Alabama, middle district	1,340 45	2,840 00	.....	359 75	.....	.....	40 71
Alabama, southern district	3,538 60	2,187 95	1,513 63	393 95	$10 00	$4,378 93	820 00
Arkanas, eastern district	8,402 12	3,694 94	4,238 26	1,873 74	100 00	.....	.....
Arkansas, western district	8,939 13	5,553 58	6,189 13	72 80	.....	1,125 00	.....
California	99,445 99	30,916 00	9,790 96	511 00	80 00	200 00	.....
Colorado	545 34	185 00	545 34	180 00	.....	3,263 43	.....
Connecticut	1,574 16	2,271 66	27 58	1,568 66	.....	.....	4,019 53
Delaware	1,385 01	184 64	.....	25 00	.....	.....	.....
Florida, northern district	5,609 00	233 00	.....	190 00	.....	373 70	719 17
Florida, southern district	4,236 42	268 64	4,236 42	168 64	.....	.....	40 45
Georgia, northern district	7,004 03	3,200 00	130 37	89 96	176 13	752 77	286 09
Georgia, southern district	1,368 62	2,942 18	205 81	259 56	20 00	.....	945 12
Illinois, northern district	254,420 96	9,007 45	779 14	4,467 80	110 78	986 24	154 11
Illinois, southern district	8,110 95	3,943 00	6,376 82	855 00	.....	.....	.....
Indiana	5,842 22	2,066 34	395 19	1,410 34	.....	45 00	6,249 25
Iowa	11,089 83	2,806 00	111 81	887 80	657 15	.....	14,970 12
Kansas	229 00	2,295 00	386 00	.....	.....	7 00	111 88
Kentucky	11,440 22	18,134 28	55 00	941 05	.....	391 05	.....
Louisiana	37,609 62	831 00	4,616 35	420 00	.....	974 74	1,226 98
Maine	252 69	2,190 00	252 69	1,331 04	.....	.....	200 00
Maryland	1,177 18	1,164 00	132 50	529 00	.....	30,010 00	141 75
Massachusetts	120,736 99	4,406 19	10,214 82	3,010 04	2 00	198 34	7,098 74
Michigan, eastern district	801 21	8,935 00	801 21	8,845 00	.....	.....	150 00
Michigan, western district	293 47	1,030 50	.....	612 50	160 00	.....	.....
Minnesota	15,345 43	2,873 80	360 13	1,220 60	.....	2,715 03	595 02
Mississippi, northern district	1,478 21	2,567 67	294 51	734 38	534 64	.....	.....
Mississippi, southern district	2,576 83	2,912 84	471 00	763 79	.....	.....	.....
Missouri, eastern district	46,167 66	8,624 00	1,467 42	1,364 21	.....	.....	260 00
Missouri, western district	1,402 27	4,709 00	.....	597 00	121 80	4,037 49	.....
Nebraska	10 00	839 00	10 00	748 77	2,593 97	10,308 84	10 00
Nevada	888 30	510 00	888 30	10 00	.....	.....	.....
New Hampshire	1,893 54	325 00	1,393 54	325 00	.....	.....	.....

New Jersey	1,748 03	33,870 00	1,748 03	600 00		12,976 05	3,760 00
New York, northern district	365 00	6,065 00	365 00	3,020 00			1,397 66
New York, southern district	140,209 53	6,493 38	35,824 19	2,966 86		75,104 18	110,139 78
New York, eastern district	23,911 54	926 00	1,191 31	650 00		624 28	1,455 48
North Carolina, eastern district	4,718 99	8,586 24	620 08	1,827 84		1,186 58	93 17
North Carolina, western district	20,608 00	23,200 00			1,303 00		
Ohio, northern district	1,446 49	3,891 67	317 88	998 99		18,030 13	
Ohio, southern district	16,339 05	5,725 00	6,788 76	639 63	1,556 09	8,943 09	147 50
Oregon	42,985 28	1,605 00	2,946 44	755 00			
Pennsylvania, eastern district	39,721 60	5,952 50	2,916 35	1,257 50			2,420 04
Pennsylvania, western district	3,654 12	2,454 00	374 80	677 00			5,555 00
Rhode Island							
South Carolina	1,551 91	7,793 00	112 55	1,698 20			
Tennessee, eastern district	10,119 32	8,950 00	200 71	350 55	500 00	55 40	62 75
Tennessee, middle district	34,985 23	19,206 41	649 17	2,197 00	2,500 00	12,635 52	
Tennessee, western district	18,006 26	3,055 76	759 55	326 04		276 15	5,099 06
Texas, northern district	2,629 02	282 00		169 00			10 00
Texas, eastern district	89,185 50	5,288 47	1,291 47	1,216 03		944 44	988 70
Texas, western district	23,141 33	930 00	1,433 00	810 00			
Vermont	2,385 00	1,307 90	2,385 00	1,007 40			
Virginia, eastern district	8,000 00	1,085 00	495 11	218 00		2,463 48	
Virginia, western district	5,401 21	6,452 95	1,795 44	15 45		630 00	
West Virginia	834 53	39,845 00	618 92	4,188 00			
Wisconsin, eastern district	6,912 44	234 00	5,465 42				250 00
Wisconsin, western district	14,692 46	2,807 27	3,838 19	1,001 75			750 00
Arizona							
Dakota	4,022 83	7,655 14	517 37	1,136 16		81 37	
District of Columbia	1,363 37	2,141 00	1,363 37	1,516 00			3,169 92
Idaho*							
Montana							
New Mexico		10 00			2,006 00	298 50	
Utah							
Washington	575 34	5,634 16	575 34	5,509 16			
Wyoming							
Total	1,197,028 02	354,538 51	130,707 25	69,542 94	12,371 56	194,016 73	167,853 44

* No reports received

EXHIBIT C.—*Statement showing the number of civil suits, to which the United States was not a party, commenced and terminated in the circuit and district courts of the United States during the fiscal year ending June 30, 1880, with the number pending July 1, 1880.*

Districts.	Number commenced during the fiscal year ending June 30, 1880.			Number terminated during the fiscal year ending June 30, 1880.										Number pending July 1, 1880.		
				Admiralty.					Other suits.							
	Admiralty.	Other suits.	Total.	Judgment for plaintiff.	Judgment for defendant.	Dismissed or discontinued.	Not stated.	Total.	Judgment for plaintiff.	Judgment for defendant.	Dismissed or discontinued.	Not stated.	Total.	Admiralty.	Other suits.	Total.
Alabama, northern district	.....	7	7	.....	.....	.....	.....	.....	10	9	.....	.....	19	1	39	40
Alabama, middle district	1	21	22	.....	.....	.....	.....	.....	13	2	.....	21	36	.....	63	63
Alabama, southern district	15	22	37	17	.....	.....	.....	17	11	.....	.....	.....	11	1	42	43
Arkansas, eastern district	1	301	302	.....	.....	1	.....	1	120	77	.....	.....	197	1	104	105
Arkansas, western district	.....	30	30	.....	.....	.....	.....	.....	21	3	.....	.....	24	.....	23	23
California	42	134	176	10	.....	.....	14	24	32	35	.....	23	90	70	226	296
Colorado	.....	100	100	.....	.....	.....	.....	.....	8	14	.....	.....	22	.....	78	78
Connecticut	4	106	110	1	.....	.....	1	2	25	2	.....	16	43	4	334	338
Delaware	8	19	27	5	1	.....	6	12	1	.....	.....	3	4	4	34	38
Florida, northern district	10	20	30	6	.....	.....	.....	6	19	5	.....	3	27	9	289	298
Florida, southern district	27	.....	27	28	5	.....	.....	33	.....	.....	.....	.....	.....	1	.....	1
Georgia, northern district	.....	26	26	.....	.....	.....	.....	.....	25	1	.....	.....	26	.....	71	71
Georgia, southern district	5	95	100	.....	1	.....	1	2	31	3	.....	69	103	4	236	240
Illinois, northern district	61	626	687	22	11	.....	.....	33	332	305	.....	.....	637	278	2, 867	3, 145
Illinois, southern district	6	225	231	1	.....	1	.....	2	140	10	28	.....	178	13	612	625
Indiana	11	298	309	5	1	.....	1	7	222	21	.....	238	481	4	411	415
Iowa	5	319	324	2	1	.....	.....	3	176	141	.....	37	354	2	897	899
Kansas	.....	478	478	.....	.....	.....	.....	.....	105	.....	.....	129	324	.....	358	358
Kentucky	65	22	87	3	1	20	.....	24	18	10	.....	10	38	40	75	115
Louisiana	233	283	516	99	43	.....	.....	142	70	4	.....	48	122	96	161	257
Maine	12	107	119	11	1	.....	.....	12	14	68	.....	.....	82	.....	167	167
Maryland	144	113	257	69	58	.....	.....	127	93	66	.....	.....	159	45	296	341
Massachusetts	90	396	486	39	53	.....	.....	92	80	338	45	.....	463	103	1, 134	1, 237
Michigan, eastern district	303	237	540	198	14	.....	.....	212	133	48	.....	.....	181	800	(a)	800
Michigan, western district	39	229	268	35	16	.....	.....	51	80	128	.....	.....	208	11	814	825
Minnesota	.....	144	144	.....	.....	.....	.....	.....	61	17	33	.....	111	.....	587	587
Mississippi, northern district	1	61	62	.....	.....	.....	.....	.....	29	9	.....	.....	38	1	73	74
Mississippi, southern district	5	51	56	.....	.....	.....	.....	.....	27	22	.....	.....	49	16	62	78
Missouri, eastern district	12	173	185	5	14	.....	.....	19	194	4	.....	.....	198	8	19	27
Missouri, western district	23	263	286	.....	.....	.....	.....	.....	151	29	.....	60	240	23	357	380
Nebraska	4	254	258	.....	.....	.....	.....	.....	89	58	.....	.....	147	4	294	298
Nevada	.....	20	20	.....	.....	.....	.....	.....	19	4	14	.....	37	.....	39	39

New Hampshire	.....	36	36	.....	.....	.....	.....	.....	3	3	4	.....	10	.....	100	100
New Jersey	46	11	57	18	5	.....	22	45	11	.....	.....	2	13	16	13	29
New York, northern district	19	508	527	4	8	1	.....	13	60	20	.....	90	170	23	2,673	2,696
New York, southern district	311	1,087	1,398	22	12	.....	43	77	39	43	.....	477	559	395	5,614	6,009
New York, eastern district	358	57	415	14	13	.....	175	202	7	11	.....	10	28	804	498	1,302
North Carolina eastern district	1	48	49	1	.....	.....	.....	1	27	8	.....	.....	35	1	73	74
North Carolina, western district	.....	20	20	.....	.....	.....	.....	.....	20	10	.....	.....	30	.....	89	89
Ohio, northern district	14	210	224	12	2	.....	.....	14	247	24	.....	27	298	6	413	419
Ohio, southern district	34	188	222	15	2	.....	.....	17	76	43	.....	.....	119	26	452	478
Oregon	9	112	121	3	.....	4	.....	7	40	28	.....	.....	68	2	75	77
Pennsylvania, eastern district	80	813	893	35	10	71	.....	116	68	27	191	.....	286	51	813	864
Pennsylvania, western district	26	32	58	6	2	.....	12	20	11	2	.....	6	19	25	109	134
Rhode Island	13	15	28	12	1	.....	.....	13	13	12	.....	.....	25	3	103	106
South Carolina	20	69	89	11	1	.....	.....	12	19	41	.....	11	71	8	147	155
Tennessee, eastern district	.....	13	13	.....	.....	.....	.....	.....	9	2	18	.....	29	.....	81	81
Tennessee, middle district	.....	33	33	.....	.....	.....	.....	.....	19	17	.....	.....	36	.....	82	82
Tennessee, western district	10	120	130	11	1	.....	.....	12	38	38	.....	.....	76	.....	150	150
Texas, northern district	.....	136	136	.....	.....	.....	.....	.....	30	2	.....	18	50	.....	87	87
Texas, eastern district	14	130	144	1	7	.....	.....	8	89	22	.....	38	149	6	144	150
Texas, western district	.....	41	41	.....	.....	.....	.....	.....	22	21	.....	.....	43	.....	163	163
Vermont	.....	36	36	.....	.....	.....	.....	.....	19	2	.....	21	42	.....	65	65
Virginia, eastern district	47	16	63	39	4	.....	.....	43	5	15	.....	.....	20	8	73	81
Virginia, western district	.....	29	29	.....	.....	.....	.....	.....	15	.....	13	3	31	.....	114	114
West Virginia	8	90	98	6	1	.....	.....	7	55	30	.....	.....	85	7	459	466
Wisconsin, eastern district	36	109	145	15	.....	20	.....	35	37	11	70	.....	118	25	334	359
Wisconsin, western district	1	84	85	.....	.....	.....	.....	.....	20	6	.....	55	81	3	155	158
Total of each class of cases	2,174	9,223	11,397	781	289	118	275	1,463	3,438	1,871	416	1,415	7,140	2,948	23,841	26,789

* Not reported.

EXHIBIT C.—*Statement of the amount of judgments in civil suits, to which the United States was not a party, in the circuit and district courts of the United States during the fiscal year ending June* 30, 1880.

[Supplement.]

Districts.	Amount of judgments for plaintiffs.			Amount of judgments for defendants.		
	Admiralty.	Other suits.	Total.	Admiralty.	Other suits.	Total.
Alabama, northern district	.....	$14,787 08	$14,787 08	.....	.....	.....
Alabama, middle district	.....	44,880 53	44,880 53	.....	.....	.....
Alabama, southern district	$5,582 79	6,502 30	12,085 09	.....	.....	.....
Arkansas, eastern district	.....	175,251 00	175,251 00	.....	.....	.....
Arkansas, western district	.....	36,400 77	36,400 77	.....	$68 31	$68 31
California	8,296 10	57,727 05	66,023 15	.....	1,095 23	1,095 23
Colorado	.....	12,906 37	12,906 37	.....	5,000 00	5,000 00
Connecticut	545 00	32,891 82	33,436 82	.....	.....	.....
Delaware	1,266 93	.....	1,266 93	.....	.....	.....
Florida, northern district	13,339 99	115,374 71	128,714 70	.....	7,500 00	7,500 00
Florida, southern district	9,196 29	.....	9,196 29	.....	.....	.....
Georgia, northern district	.....	34,291 77	34,291 77	.....	6,594 23	6,594 23
Georgia, southern district	.....	81,476 01	81,476 01	.....	.....	.....
Illinois, northern district	12,359 56	2,931,729 74	2,944,089 30	.....	1,153 88	1,153 88
Illinois, southern district	501 25	6,464,019 94	6,464,521 19	.....	.....	.....
Indiana	4,553 55	5,854,083 97	5,858,637 52	.....	5,400 00	5,400 00
Iowa	.....	623,706 07	623,706 07	.....	.....	.....
Kansas	.....	563,178 11	563,178 11	.....	.....	.....
Kentucky	50,833 04	10,607 22	61,440 26	.....	.....	.....
Louisiana	130,769 00	455,838 00	586,607 00	.....	.....	.....
Maine	2,762 00	11,898 42	14,660 42	.....	358 75	358 75
Maryland	77,065 13	75,492 21	152,557 34	.....	.....	.....
Massachusetts	45,172 08	201,619 55	246,791 63	.....	3,441 51	3,441 51
Michigan, eastern district	79,659 43	2,433,834 07	2,513,493 50	.....	1,936 62	1,936 62
Michigan, western district	7,532 80	9,588,481 68	9,596,014 48	$52 15	159 08	211 23
Minnesota	.....	121,364 81	121,364 81	.....	1,742 25	1,742 25
Mississippi, northern district	.....	69,107 48	69,107 48	.....	.....	.....
Mississippi, southern district	.....	87,367 23	87,367 23	.....	.....	.....
Missouri, eastern district	1,599 74	673,251 98	674,851 72	.....	.....	.....
Missouri, western district	.....	799,258 33	799,258 33	.....	.....	.....
Nebraska	.....	154,255 63	154,255 63	.....	11,483 65	11,483 65
Nevada	.....	43,130 86	43,130 86	.....	.....	.....
New Hampshire	.....	19,430 37	19,430 37	.....	.....	.....
New Jersey	3,019 80	11,281 39	14,301 19	.....	.....	.....
New York, northern district	1,206 86	128,369 15	129,576 01	244 45	815 95	1,060 40
New York, southern district	21,091 59	217,054 71	238,146 30	814 46	3,889 75	4,704 21
New York, eastern district	53,548 51	10,306 89	63,855 40	1,594 33	1,747 60	3,341 93
North Carolina, eastern district	455 00	77,584 71	78,039 71	.....	422 27	422 27
North Carolina, western district	.....	15,886 78	15,886 78	.....	.....	.....
Ohio, northern district	1,507 38	776,509 94	778,017 32	.....	.....	.....
Ohio, southern district	18,985 35	35,959 20	54,944 55	.....	12,077 56	12,077 56
Oregon	6,222 00	63,182 40	69,404 40	.....	1,964 00	1,964 00
Pennsylvania, eastern district	50,074 73	332,926 59	383,001 32	.....	.....	.....
Pennsylvania, western district	8,400 97	530 52	8,931 49	.....	.....	.....
Rhode Island	3,836 24	37,545 71	41,381 95	.....	.....	.....
South Carolina	2,477 19	132,574 18	135,051 37	.....	.....	.....
Tennessee, eastern district	.....	2,967 27	2,967 27	.....	.....	.....
Tennessee, middle district	.....	59,267 75	59,267 75	.....	942 74	942 74
Tennessee, western district	.....	57,848 41	57,848 41	.....	.....	.....
Texas, northern district	.....	335,781 28	335,781 28	.....	52 43	52 43
Texas, eastern district	256 18	256,908 94	257,165 12	.....	.....	.....
Texas, western district	.....	115,000 00	115,000 00	.....	11,000 00	11,000 00
Vermont	.....	200,299 53	200,299 53	.....	.....	.....
Virginia, eastern district	6,495 80	14,096 37	20,592 17	.....	.....	.....
Virginia, western district	.....	20,412 53	20,412 53	.....	128 40	128 40
West Virginia	3,312 23	101,957 28	105,269 51	.....	5,355 69	5,355 69
Wisconsin, eastern district	27,576 41	2,771,447 14	2,799,023 55	.....	1,742 18	1,742 18
Wisconsin, western district	.....	42,130 03	42,130 03	.....	142 30	142 30
Total	659,500 92	37,611,973 78	38,271,474 70	2,705 39	86,214 38	88,919 77

EXHIBIT D.—*Abstract of annual reports for the fiscal year ending June 30, 1880, received from registers in bankruptcy.*

Districts.	Number of reports received.	Voluntary cases.					Compulsory cases.					Fees, emoluments, &c., received or earned.
		Number of cases referred.	Assets.	Liabilities.	Dividends.	Number of discharges granted.	Number of cases referred.	Assets.	Liabilities.	Dividends.	Number of discharges granted.	
Georgia, northern district	3	-----	-----	-----	$655 48	8	-----	-----	-----	-----	-----	$378 10
Georgia, southern district	2	-----	-----	-----	-----	8	-----	-----	-----	-----	-----	644 95
Illinois, northern district	1	7	$500 00	$333, 365 00	-----	-----	1	$125 00	$5, 775 00	-----	-----	12, 197 69
Indiana	1	-----	525 00	3, 564 50	-----	-----	-----	-----	-----	-----	-----	24 85
Louisiana	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1, 838 82
Massachusetts	4	14	17, 700 00	323, 063 42	9, 674 15	5	1	-----	4, 000 00	-----	-----	3, 051 25
Missouri, eastern district	1	-----	-----	-----	-----	-----	-----	-----	5, 803 15	-----	1	80 50
Missouri, western district	2	-----	-----	-----	21, 993 57	13	-----	-----	-----	$14, 651 84	3	1, 534 03
New York, northern district	16	2	-----	-----	11, 637 37	44	2	-----	27, 907 85	8, 805 21	11	8, 654 05
North Carolina, eastern district	1	-----	-----	-----	-----	12	-----	-----	-----	-----	-----	468 00
Pennsylvania, western district	8	2	-----	40, 000 00	1, 475 83	51	-----	-----	-----	-----	5	4, 372 30
Virginia, western district	1	-----	-----	-----	-----	11	-----	-----	-----	-----	1	233 10
West Virginia	4	-----	-----	-----	-----	28	-----	-----	-----	-----	-----	297 00
Wisconsin, eastern district	1	-----	-----	-----	18, 838 36	-----	-----	-----	466 13	-----	-----	3, 520 00

EXHIBIT E.—*Tabular statement of causes heretofore disposed of, and also of those now pending in the Court of Claims.*

Calendar year.	Number of suits brought in each year.			Number of suits closed by report* or judgment† each year.					Suits pending of the number brought in each year aforesaid.		
	Number of suits.	Amount claimed.	Number of cases in which amount is not stated in petition.	Number for claimants.	Amount claimed.	Amount of recovery.	Number for defendants.	Amount claimed.	Number of suits pending.	Amount claimed.	Recovery by United States on counter-claims.
1855	464	$5,910,801 84	142	.....	.....	.....	.....	.....	.....	.....	.....
1856	320	3,944,813 15	76	25	$370,301 99	$312,324 54	20	$167,314 86	.....	.....	.....
1857	823	3,499,058 55	31	58	254,177 20	144,924 02	49	1,180,239 94	.....	.....	.....
1858	173	1,382,158 05	83	5	179,982 73	46,858 22	31	547,001 70	.....	.....	.....
1859	40	958,867 11	21	8	76,386 13	25,539 36	53	2,187,535 86	1	.....	.....
1860	35	953,480 63	16	10	401,541 37	89,821 04	26	302,113 71	.....	.....	.....
1861	7	380,970 92	4	4	11,168 75	8,369 00	9	195,961 96	.....	.....	.....
1862	17	110,381 75	5	6	159,324 45	48,302 05	.....	.....	.....	.....	.....
1863	114	2,103,503 43	2	1	(‡)	(§)	406	3,081,662 78	.....	.....	.....
1864	154	1,614,914 37	13	5	180,801 60	73,402 32	330	4,041,952 45	.....	.....	.....
1865	46	1,347,540 17	2	8	245,885 28	126,704 14	23	630,860 76	.....	.....	.....
1866	361	6,593,772 77	234	18	247,218 74	133,960 90	206	2,146,404 13	1	$53,640 00	.....
1867	488	13,086,344 14	1	50	2,005,951 94	872,863 01	114	1,288,092 75	4	257,841 00	.....
1868	745	27,938,800 48	10	98	1,466,883 07	782,620 40	24	591,630 45	24	4,030,764 40	.....
1869	2,344	6,794,619 64	6	49	1,411,570 31	855,326 21	72	1,070,004 69	3	366,812 00	.....
1870	161	4,055,730 42	46	114	1,568,154 57	1,035,152 43	53	2,241,739 04	1	128,152 99	$1,647 58
1871	114	3,269,867 96	1	65	1,578,968 13	1,161,615 53	36	968,931 63	11	391,420 27	.....
1872	450	8,981,125 45	2	132	2,831,172 55	2,028,865 50	17	461,429 21	4	297,743 57	.....
1873	1,125	5,090,165 51	2	1,528	5,775,255 42	3,627,957 21	30	696,283 32	7	962,733 63	.....
1874	2,180	30,849,722 12	14	731	1,645,580 81	908,622 30	65	1,119,713 10	20	1,106,687 13	.....
1875	738	3,971,371 59	30	234	4,035,542 57	2,949,136 09	59	2,850,959 23	48	1,622,941 22	.....
1876	592	3,302,910 55	9	27	1,524,476 29	1,126,726 10	2,432	13,783,158 91	13	937,533 20	4,419 39
1877	397	8,015,936 99	1	35	474,000 51	205,148 81	440	10,462,638 91	42	631,520 85	6,106 53
1878	102	4,339,622 11	.....	66	865,814 41	231,364 58	2,498	39,864,979 94	32	3,812,083 32	.....
1879	164	2,313,318 49	.....	43	1,223,615 17	416,549 18	158	13,799,739 19	141	2,006,198 22	618,627 73
1880	246	745,544 03	.....	191	1,018,657 02	332,618 89	1,296	1,968,321 03	90	702,660 35	18,884 22
Total	12,400	151,555,342 22	.....	3,511	29,552,431 01	17,544,771 83	8,447	105,648,669 55	442	17,308,780 15	649,685 45

* The act organizing the Court of Claims was passed February 4, 1855 (10 Stat., 612), by which the court was directed to hear and determine claims and *report* the cases and facts to Congress with their opinion.

† On the 3d of November, 1863 (12 Stat., 765), the said act was amended and the court authorized to render final *judgments*, with right of appeal to the Supreme Court of the United States. ‡ No amount claimed. § Judgment for land-scrip.

EXHIBIT F.—*General statement of condition of all appropriations placed under the Department of Justice from which payments were made during the fiscal year ending June* 30, 1880, *as required by section* 3, *act approved June* 30, 1879.

Expenses United States courts, 1878:		
July 1, 1879. Balance of appropriation	$30,357 35	
Reappropriation, act June 16, 1880	26,000 00	
Repayments during fiscal year	5,230 77	
	61,588 12	
Payments during fiscal year	32,081 71	
Balance July 1, 1880		$29,506 41
Expenses United States courts, 1879:		
July 1, 1879. Balance of appropriation	10,137 68	
Reappropriation, act June 16, 1880	375,000 00	
Repayments during fiscal year	21,310 42	
	406,448 10	
Payments during fiscal year	114,683 24	
Balance July 1, 1880		291,764 86
Expenses United States courts, 1880:		
Fees of marshals:		
Appropriation, act June 16, 1880	600,000 00	
Payments during fiscal year	321,300 00	
Balance July 1, 1880		278,700 00
Fees of district attorneys:		
Appropriation, act June 30, 1879	300,000 00	
Payments during fiscal year	246,234 30	
Balance July 1, 1880		53,765 70
Fees of clerks:		
Appropriation, act June 30, 1879	160,000 00	
Payments during fiscal year	110,480 65	
Balance July 1, 1880		49,519 35
Fees of commissioners:		
Appropriation, act June 30, 1879	140,000 00	
Payments during fiscal year	82,546 32	
Balance July 1, 1880		57,453 68
Fees of jurors:		
Appropriation, act June 30, 1879	400,000 00	
Reappropriation, as apportioned by letter of the Attorney-General to the Secretary of the Treasury, act June 16, 1880	40,000 00	
Repayments during fiscal year	16,679 45	
	456,679 45	
Payments during fiscal year	427,355 75	
Balance July 1, 1880		29,323 70
Fees of witnesses:		
Appropriation, act June 30, 1879	550,000 00	
Reappropriation, act June 16, 1880, as apportioned by Attorney-General	60,000 00	
Repayments	10,541 46	
	620,541 46	
Payments during fiscal year	553,884 38	
Balance July 1, 1880		66,657 08

Support of prisoners:		
Appropriation, act June 30, 1879	$193,000 00	
Reappropriation, act June 16, 1880, as apportioned by Attorney-General	125,000 00	
Repayments	9,555 59	
	327,555 59	
Payments during fiscal year	230,541 40	
Balance July 1, 1880		$97,014 19
Rent of court-rooms:		
Appropriation, act June 30, 1879	67,000 00	
Payments during fiscal year	44,885 17	
Balance July 1, 1880		22,114 83
Miscellaneous expenses:		
Appropriation, act June 30, 1879	280,000 00	
Reappropriation, act June 16, 1880, as apportioned by letter of the Attorney-General	25,000 00	
Repayments during fiscal year	2,391 78	
	307,391 78	
Payments during fiscal year	289,997 44	
Balance July 1, 1880		17,394 34
Total balance July 1, 1880, of appropriations for expenses United States courts		671,942 87
Salaries, Department of Justice, 1880:		
Appropriation, act June 30, 1879	101,480 00	
Payments during fiscal year	101,353 93	
Balance July 1, 1880		126 07
Rent of building, Department of Justice, 1880:		
Appropriation, act June 21, 1879	10,000 00	
Payments during fiscal year	10,000 00	
Salary of Warden of the Jail of the District of Columbia, 1880:		
Appropriation, act June 21, 1879	1,800 00	
Payments during the fiscal year	1,800 00	
Support of convicts 1879 (transferred from the District of Columbia):		
July 1, 1879. Balance of appropriation	5,617 70	
Payment during fiscal year	1,937 50	
Balance July 1, 1880		3,680 20
Support of convicts, 1880 (from District of Columbia):		
Appropriation, act March 3, 1879	15,000 00	
Payments during fiscal year	5,204 77	
Balance July 1, 1880		9,795 23
Defending suits and claims for seizure of captured or abandoned property, 1878:		
July 1, 1879. Balance	95 25	
Payment during fiscal year	87 00	
Balance on July 1, 1880, carried to surplus fund		8 25
Defending suits and claims for seizure of captured or abandoned property, 1880:		
Appropriation, act March 3, 1879	25,000 00	
Payments during fiscal year	24,728 58	
Balance July 1, 1880		271 42

Punishing violations of intercourse acts and frauds, 1878:		
July 1, 1879. Balance	$7,053 00	
Payments during fiscal year	281 00	
Balance on July 1, 1880, carried to surplus fund		$6,772 00
Punishing violations of intercourse acts and frauds, 1879:		
July 1, 1879. Balance	3,878 19	
Payments during fiscal year	1,475 58	
Balance July 1, 1880		2,402 61
Punishing violations of intercourse acts and frauds, 1880:		
Appropriation, act March 3, 1879	3,000 00	
Payments during fiscal year	2,905 76	
Balance July 1, 1880		94 24
Prosecution of crimes, 1879:		
July 1, 1879. Balance	1,121 36	
Repayments during fiscal year	2,388 83	
	3,510 19	
Payments during fiscal year	1,231 75	
Balance July 1, 1880		2,278 44
Prosecution of crimes, 1880:		
Appropriation, act March 3, 1879	20,000 00	
Repayment during fiscal year	89 50	
	20,089 50	
Payments during fiscal year	14,156 39	
Balance July 1, 1880		5,933 11
Court-house, Washington, District of Columbia, 1880:		
Appropriation, act March 3, 1879	1,000 00	
Reappropriation, act June 16, 1880	500 00	
	1,500 00	
Payments during fiscal year	1,000 00	
BalanceJuly 1, 1880		500 00
Expenses of Territorial courts in Utah, 1875 and 1876 (for relief of George R. Maxwell, late marshal):		
July 1, 1879. Balance	24,465 35	
Payment during fiscal year	12,916 08	
Balance July 1, 1880		11,549 27
Expenses of Territorial courts in Utah, 1878:		
July 1, 1879. Balance	1,748 32	
Payments during fiscal year	1,748 32	
Expenses of Territorial courts in Utah, 1879:		
July 1, 1879. Balance	1,252 31	
Payments during fiscal year	1,127 05	
Balance July 1, 1880		125 26
Expenses of Territorial courts in Utah, 1880:		
Appropriation, act March 3, 1879	20,000 00	
Reappropriation, act June 16, 1880	6,000 00	
	26,000 00	
Payments during fiscal year	23,283 25	
Balance July 1, 1880		2,716 75
Prosecution and collection of claims, 1879:		
July 1, 1879. Balance	886 00	
Payments during fiscal year	300 00	
Balance July 1, 1880		586 00

Prosecution and collection of claims, 1880:		
Appropriation, act March 3, 1879	$2,500 00	
Payments during fiscal year	1,050 00	
Balance July 1, 1880		1,450 00
Contingent expenses, Department of Justice:		
Furniture and repairs, 1880:		
Appropriation, act June 21, 1879	1,000 00	
Payments during fiscal year	989 83	
Balance July 1, 1880		$10 17
Books for department library, 1880:		
Appropriation, act June 21, 1879	1,500 00	
Payments during fiscal year	1,500 00	
Books for office of Solicitor, 1880:		
Appropriation, act June 21, 1879	500 00	
Payments during fiscal year	499 69	
Balance July 1, 1880		31
Stationery, 1880:		
Appropriation, act June 21, 1879	1,500 00	
Payments during fiscal year	1,500 00	
Horses and wagons, 1880:		
Appropriation, act June 21, 1879	1,200 00	
Payment during fiscal year	958 26	
Balance July 1, 1880		241 74
Miscellaneous expenses, 1880:		
Appropriation, act June 21, 1879	6,000 00	
Payments during fiscal year	5,993 68	
Balance July 1, 1880		6 32
Fees of supervisors of election:		
Payments during fiscal year		45,697 27

EXHIBIT G.—*Statement showing items, amounts, causes of expenditures, and persons paid from contingent fund, for the fiscal year ending June* 30, 1880.

1879.			
July 17.	Perry & Brother:		
	1 dozen towels		$4 50
26.	J. H. Taylor:		
	6½ days' labor, $1.50		9 75
	H. Dudley:		
	8 days' labor, $1.50		12 00
22.	H. Dudley:		
	Carting rubbish		50
18.	Mitchell & Martin:		
	3 dozen towels, $6	$18 00	
	½ dozen tea towels, $3	1 50	
		19 50	
	Deduct 10 per cent	1 95	
			17 55
11.	John Robinson:		
	Hauling books		2 00
26.	J. G. Weaver:		
	Making 2 boxes	7 50	
	325 feet lumber and laying down, $4	13 00	
			20 50

1879.				
July	24.	Herman, Baumgarten & Bros.:		
		1 rubber stamp	$4 50	
		1 ½-pint bottle India ink	1 50	
		37 checks for keys	12 00	
		13 checks for keys	3 90	
				$21 90
	22.	John Keyworth:		
		256 horse-car tickets		10 00
	31.	Mary Harrison:		
		Washing 9¼ dozen towels, 50 cents	4 63	
		Furnishing tape and putting on loops (Solicitor of Treasury's office)	80	
				5 43
		M. Linkins:		
		Sweeping and cleaning office (Solicitor of Treasury, for July, 1879)		20 00
		H. Michaels:		
		Street-car tickets (Solicitor of Treasury)	2 00	
		½ dozen tumblers	75	
				2 75
		Charles H. Lee:		
		Salary for July as driver department carriage		70 80
	30.	J. R. Harrover:		
		9 pounds of zinc, 15 cents		1 35
	31.	F. A. Fill & Co.:		
		Subscription to New York Herald and Times, 1 month, July 1 to 31		3 00
Aug.	5.	J. C. Wall:		
		3 7-gallon Connelly fire-extinguishers, $50		150 00
July	1.	Western Union Telegraph Company:		
		Telegraphing for office of Attorney-General for July		84 89
		Washington Gas-Light Company:		
		7,100 feet gas, 2½	17 75	
		Deduct 10 per cent	1 77	
				15 98
	11.	J. H. Klock:		
		1 dozen gum paste, in pots		6 00
	9.	Adams Express Company:		
		Freight, 1 package to New Orleans	2 00	
		Freight, 1 package from New Haven	90	
		Freight, 1 package to Richmond	40	
		Freight, 1 package to Jefferson, Tex	6 00	
				9 30
Aug.	5.	Wurdeman & Co.:		
		1 key board		9 00
	14.	John Robinson:		
		Hauling books		2 00
	30.	Mary Harrison:		
		Washing 9⅛ dozen towels, 50 cents		4 67
	25.	John Keyworth:		
		256 car tickets		10 00
	30.	M. Linkin:		
		Sweeping and cleaning office Solicitor of Treasury for August		20 00
		Charles H. Lee:		
		Salary as driver department carriage for August		70 80
Sept.	15.	New York Times:		
		Subscription to New York Times from September 15, 1879, to June 30, 1880 (Solicitor of Treasury) 9½ months		9 50
	16.	New York Herald:		
		Subscription to New York Herald from September 15, 1879, to June 30, 1880 (Solicitor of Treasury)		8 00
	30.	M. Linkins:		
		Sweeping and cleaning office Solicitor of Treasury for September.		20 00

1879.				
Sept.	30.	H. Michaels:		
		Car tickets	$4 50	
		Expressage on package	50	
		6 copies Times and Herald (Solicitor of Treasury's office)	60	
				$5 60
		M. Harrison:		
		Washing 12 dozen towels, 50 cents (Solicitor of Treasury's office)		6 00
		Charles H. Lee:		
		Salary as driver department carriage for September		68 40
July	12.	John H. Magruder:		
		1 ice bucket, at 90 cents; 2, at 30 cents	1 50	
	14.	1 ice pick, at 35 cents; 4 bars long soap, 50 cents	85	
	25.	1 box, at 40 cents; 1 dozen tapers, at $3	3 40	
	26.	1 dust-brush, at 50 cents; 2 candles, 8 cents	58	
	28.	1 feather duster, at $3; (August 5) 1 feather duster, at $3	6 00	
Aug.	5.	2 long soap, 25 cents; 1 dozen matches, at 20 cents	45	
		2 sponges, at 20 cents; ½ dozen brooms, $2	2 40	
	11.	1 ice bucket, at $1; 1 sponge, at 60 cents	1 60	
		1 dust-pan, at 50 cents; 1 dust-brush, at 50 cents	1 00	
		8 dozen glicerine soap, at $1.25	10 00	
		4 dozen turtle-oil soap, $6; 2 dozen elite, $3	9 00	
		1 dozen round soap, at $3; ½ dozen Bonchire soap, 54 cents	3 54	
		1 dozen clear soap, at $2.25; 1 box old Babbitt, at $4.50	6 75	
		4 cakes K. C. soap, 32 cents; 2 dozen boxes matches, 50 cents	82	
				47 89
Sept.	30.	Henry Coleman:		
		Washing towels for quarter ending September 30, 1879		36 00
July	1.	Western Union Telegraph Company:		
		Telegraphing for office Solicitor of Treasury for July		19 64
Aug.	1.	Western Union Telegraph Company:		
		Telegraphing for office of Attorney-General for August		40 98
	7.	Western Union Telegraph Company:		
		Telegraphing for office Solicitor of Treasury for August		6 50
		Washington Gas-Light Company:		
		Gas for August, 7,000 feet, at 2½	17 50	
		Deduct 10 per cent	1 75	
				15 75
Sept.	15.	Leadingham & Co.:		
		Use of horse 1 day	2 00	
	23.	Use of horse ½ day	1 00	
	25.	Use of horse 1 day	2 00	
				5 00
	29.	John Keyworth:		
		128 car-tickets		5 00
	6.	F. A. Fill:		
		Herald and Times August 1 to September 6, 1879 (Solicitor of Treasury's office)		3 50
	9.	John Robinson:		
		Hauling books to post-office		1 00
Oct.	4.	Henry Pinkney:		
		Hauling books		1 50
	1.	F. A. Fill:		
		3 months' subscription to Evening Star, July 1 to September 30, 1879		2 25
		D. Rickenbacker:		
		2 ice pitchers	2 00	
		1 ice pitcher	50	
				2 50
		W. W. Cox:		
		1 single-stroke staple press	2 50	
		3 boxes fasteners	1 50	
				4 00
Oct.	1.	National Telephone Company:		
		Rental of signal bell and two telephones and exchange service from July 1, 1879, to October 1		12 50

1879.				
Sept.	1.	Western Union Telegraph Company:		
		Telegraphing for Office of Attorney-General for September		$26 86
Aug.	18.	Adams Express Company:		
		Freight, 1 package to Charlotte, N. C	$0 50	
		1 package to Salt Lake City	2 50	
	25.	1 package from Milan	80	
			———	3 80
Sept.	17.	Adams Express Company:		
		Freight, 1 package to Topeka, Kans	2 00	
		1 package to Boston	55	
			———	2 55
July	31.	Great Falls Ice Company:		
		3,625 pounds ice, 35 cents	12 69	
Aug.	31.	3,575 pounds ice	12 51	
Sept.	30.	3,450 pounds ice	12 07	
			———	37 27
Sept.	—.	Washington Gas Light Company:		
		10,200 feet gas, $2.50	25 50	
		Deducted	2 55	
			———	22 95
Oct.	4.	John Robinson:		
		Hauling 1 load of books to post-office		1 50
	13.	John Keyworth:		
		256 car tickets		10 00
July	22.	J. G. Weaver:		
		Making 2 boxes	4 50	
Sept.	15.	Taking up 5 rooms carpet, at $3	15 00	
	23.	Putting down 5 rooms carpet, at $3 (Solicitor of Treasury's Office)	15 00	
			———	34 50
Aug.	15.	J. G. Weaver:		
		Repairing 3 locks and keys	1 50	
Oct.	6.	Fixing window ropes	1 50	
		Fixing transom ropes	50	
		Putting down 18 carpets, $3	54 00	
		Putting down 171 yards hall matting, 8 cents	13 68	
		Removing ink from carpet	1 00	
			———	72 18
	18.	John C. Callahan & Co.:		
		Calcimining ceiling, painting side walls and wood-work to Attorney-General's Office		35 00
Sept.	23.	James Talty:		
		1 new cover for water-closet	75	
		Repairing water-closet	3 00	
		Solder and putty	25	
		Repairing water-closet and resetting	4 50	
			———	8 50
Oct.	18.	J. G. Weaver:		
		Taking up and cleaning matting, lower hall	6 00	
		Putting down 1 carpet	3 00	
			———	9 00
		J. G. Weaver:		
		1 window-rope		1 50
	31.	James Talty:		
		2 Argand chimneys	25	
		3 new burners, 45 cents; 3 gum ferrules, $1.50	1 95	
		22 feet Taylor's best tubing, fitting same to stands, and overhauling stands	11 00	
		1 fancy shade for stand	3 50	
	15.	1 patent burner and time	40	
			———	17 10
Nov.	1.	Washington Gas-Light Company:		
		Gas for October, 15,200 feet	38 00	
		Discount, 10 per cent	3 80	
			———	34 20
		Washington City post-office:		
		Box rent, &c., from July 1 to September 30, 1879		1 15

1879:				
Nov.	—.	Metropolitan Railroad Company:		
		240 car-tickets		$10 00
Oct.	25.	J. G. Weaver:		
		Putting down 20 yards cocoa matting, 8 cents	$1 60	
	29.	Staining floors and varnishing doors in hall	6 00	
		Hanging door, Attorney-General's room	75	
		Putting ropes 4 windows	6 00	
		1 pair door knobs, Attorney-General's room	1 00	
		Fixing links on door keys, &c	2 00	
		Hanging curtain, chief clerk's room	25	
		Moving furniture	75	
Nov.	5.	Putting down library carpet	3 00	
		Taking down 35 window-awnings	8 25	
				26 60
Oct.	15.	J. H. Klopfer:		
		To 5 days' service in putting up books, $2		10 00
		National Republican:		
		Subscription from July 1, 1879, to October 31, 1879 (Office of Solicitor of the Treasury)		2 00
	31.	Charles H. Lee:		
		Salary as driver for department carriage for October		70 80
		M. Harrison:		
		Washing 8½ dozen towels, 50 cents (Office of Solicitor of the Treasury)		4 34
		M. Linkins:		
		Cleaning and sweeping for October (Office of Solicitor of the Treasury)		20 00
		H. Michaels:		
		Matches, 40; car tickets, $2 (Office of Solicitor of the Treasury)		2 40
	16.	John Robinson:		
		Hauling 2 loads of books to post-office and Capitol		4 00
Nov.	—.	Henry Van Zuilen:		
		3 temporary binders, at $2.50 (Office of Solicitor of the Treasury)		7 50
		James Temple Brown:		
		1 silk lithograph ribbon for type-writer		2 00
		James Talty:		
		To 1 large Bedfordshire urinal	$7 50	
		1 heavy lead pipe	2 50	
		6 pounds lead waste-pipe	90	
		2 pounds lead waste-pipe	30	
		1 brass thimble, 35 cents; solder, 30 cents	65	
		1 burner for hall	40	
		Labor taking out old urinal and fitting new one	4 50	
				16 75
	15.	Metropolitan Railroad Company:		
		To 240 car tickets		10 00
	20.	H. Winfield:		
		To sawing and splitting and stowing 1½ cords wood		3 75
	14.	J. Lyod:		
		To sawing and stowing ½ cord wood		1 00
July	31.	Atlantic and Pacific Telegraph Company:		
		Telegraphing for office of Solicitor of the Treasury		27
Nov.	—.	Herman, Baumgarten & Bro:		
		To 1 self-inker, $8; 1 No. 6 ribbon, $1		9 00
	13.	J. Lyod:		
		To sawing and stowing ½ cord wood		1 00
	25.	Henry Van Zuilen:		
		To 6 temporary binders		15 00
	3.	Western Union Telegraph Company:		
		Telegraphing for office of Solicitor of the Treasury, September		3 38
Oct.	1.	Western Union Telegraph Company:		
		Telegraphing for office of Solicitor of the Treasury for October.		9 50

1879.				
Oct.	1.	Western Union Telegraph Company:		
		Telegraphing for office of Attorney-General, for October		$45 03
Nov.	—.	Margaret Linkins:		
		To sweeping and cleaning office of Solicitor of the Treasury, for November, 1879		20 00
	18.	W. W. Burdette:		
		To 6 pieces, 272¾ yards cambric, 8 cents		21 82
	30.	Charles H. Lee:		
		To salary as driver department carriage, for November		68 40
	25.	Henry Brooks:		
		To 1½ cords hard wood, $7.50; 1½ pine, $7.12		14 62
Dec.	1.	Mary Harrison:		
		To washing for November, 8 dozen towels, 50 cents (Office of Solicitor of Treasury.)		4 00
	2.	A. Saks & Co.:		
		To 1 overcoat for driver of department carriage, Charles H. Lee.		25 00
Oct.	30.	Dickson & King:		
		1 cord wood, sawed 3 pieces,	$8 00	
		¼ cord pine, sawed and split	1 75	
		Putting away	93	
				10 68
Nov.	12.	Atlantic and Pacific Telegraph Company:		
		Telegraphing for Attorney-General's office		3 52
Dec.	—.	Washington Gas-light Company:		
		Gas for November, 13,500 feet, $2.50	33 75	
		Discount 10 per cent	3 37	
				30 38
	8.	Henderson Winfield:		
		Sawing and stowing 1 cord wood		2 00
Nov.	14.	Holmead & Co.:		
		2 spittoons		1 00
Dec.	5.	Henderson Winfield:		
		Sawing and stowing 1 cord wood		2 00
		Henderson Winfield:		
		Sawing, splitting, and stowing 1½ cords wood		2 75
Nov.	—.	Western Union Telegraph Company:		
		Telegraphing for office of Attorney-General (November)		78 98
	12.	Atlantic and Pacific Telegraph Company:		
		Telegraphing for Solicitor Treasury's office		47
Oct.	6.	Adams Express Company:		
		1 package from Philadelphia	35	
Nov.	17.	1 package from New York	55	
	19.	1 package from Boston	90	
				1 80
Dec.	8.	Henry Brooks:		
		5½ cords wood (oak), at $5		27 50
	19.	John H. Taylor:		
		Cleaning windows, &c		3 75
	5.	National Republican:		
		Subscription from October 1, 1879, to October 1, 1880		6 00
	22.	Metropolitan Railroad Company:		
		240 car tickets		10 00
	5.	National Republican:		
		Subscription from October 1, 1879, to October 1, 1880, 2 copies		12 00
	12.	J. G. Weaver:		
		Putting in 2 window ropes, $1.50	3 00	
		Hanging map	50	
	16.	Fixing 3 window shades, 25 cents	75	
	19.	Dressing building	12 50	
	6.	1 bolt and repairs to front door	2 00	
		Put lot carpet in hall	1 50	
	24.	2 pairs double-acting hinges	12 00	
		Putting on double-acting hinges	2 50	
				34 75

1879.				
Dec.	31.	Charles H. Lee:		
		Salary as driver department carriage for December		70 80
		Henry Coleman:		
		Washing towels, for quarter ending December 31, 1879		36 00
		National Telephonic Exchange:		
		Rental of signal bell and 2 telephones for quarter ending January 1, 1880		12 50
		Western Union Telegraph Company:		
		Telegraphing for office Solicitor of Treasury (November)		6 49
		George Brine:		
		Hauling one load of books from Department of Justice to the City Post-Office		1 00
		Mary Harrison:		
		Washing towels for December, 10 dozen, at 50 cents		5 00
		(Solicitor of Treasury's Office.)		
		Hiram Michaels:		
		Car tickets, Solicitor Treasury's Office		1 50
		Margaret Linkins:		
		Sweeping and cleaning, December, 1879, Solicitor Treasury's Office		20 00
Oct.	31.	Great Falls Ice Company:		
		2,850 pounds ice, at 35 cents	$9 98	
Nov.	30.	2,650 pounds ice	9 28	
Dec.	31.	2,875 pounds ice	10 06	
				29 32
		Washington Gas-light Company:		
		Gas for December, 17,100 feet, at $2.50	42 75	
		Discount 10 per cent	4 27	
				38 48
		F. A. Fill:		
		Washington Star, from October 1 to December 31		2 25
		Washington City Post-Office:		
		Box rent, &c., from October 1 to December 31, 1879		35
Dec.	6.	N. W. Burchell:		
		Blacking brush, 85 cents; 1 whisk, 50 cents	1 35	
		1 feather duster, $1.50; 12 vas. tar soap, $2.15	3 65	
		¼ gross parlor matches, at $3.50	88	
		12 cakes oat-meal soap, $2; 24 Colgate soap, $4.30	6 30	
		3 whisk brushes	1 05	
				13 23
1880.				
Jan.	9.	William H. Boyd:		
		2 copies District of Columbia directory, $5		10 0
		Henderson Winfield:		
		Sawing and stowing ½ cord wood		1 00
	8.	The Evening Mail (N. Y.):		
		Subscription from December 10, 1879, to December 10, 1880		6 00
		Western Union Telegraph Company:		
		Telegraphing for office of Attorney-General for December, 1879		71 13
1879.				
Dec.	9.	Adams Express Company:		
		1 package from New York, Hon. T. Simons	75	
	17.	1 package to A. B. Newcomb, Saint Louis	40	
	22.	1 bundle from Boston, Department of Justice	1 25	
				2 40
	7.	Conrad Becker:		
		1 each specie bags, $3.50 and $4.25; 2 straps, 50 cents	8 25	
	26.	Repairing old mail bag	1 25	
	29.	1 large leather United States mail-bag to order	11 75	
		1 fine United States mail lock with triplicate keys	1 40	
		Lettering United States mail-bag	1 00	
1880.				23 65
Jan.	1.	B. H. Stinemetz:		
		1 pair drivlng gloves		2 25

1880.				
Jan. 1.		Henderson Winfield:		
		Sawing and stowing ½ cord of wood		$1 00
		Jesse H. Klopfer:		
		9 days' work in putting up books and delivering same, at $2 per day		18 00
14.		Robert Ball:		
		Hauling 1 load of books to Post-Office and Capitol		1 50
17.		Washington and Georgetown Railroad Company:		
		Fare tickets		10 00
30.		Henderson Winfield:		
		Sawing and stowing ½ cord wood		1 00
		John H. Taylor:		
		Cleaning grates and varnishing		1 50
1879.		Western Union Telegraph Company:		
Dec.		Telegraphing for office of Solicitor of the Treasury for December, 1879		7 42
1880.		Charles H. Lee:		
Jan.		Salary as driver of department carriage for January, 1880		71 50
31.		Washington Law Reporter:		
		Subscription from January 1, 1880, to January 1, 1881		3 00
		Washington Law Reporter:		
		Subscription from January 1, 1880, to July 1, 1880		1 50
		(Solicitor Treasury's Office.)		
		Mary Harrison:		
		Washing for January, 9 dozen towels, at 50 cents		4 50
		(Solicitor Treasury's Office.)		
		Hiram Michaels:		
		Street cars, $2.25; 1 comb, 75 cents	3 00	
		1 soap dish, 45 cents; matches, 75 cents; 1 screw driver, 25 cents	1 45	
		(Solicitor Treasury's Office.)		4 45
		Margaret Linkins:		
		Sweeping and cleaning office Solicitor of the Treasury for the month of January, 1880		20 00
		Jacobs Brothers:		
		1 American clock, extra gilt		13 00
		Washington Gas Light Company:		
		15,700 feet gas from January 1 to February 1, at $2.25 per 1,000 feet	35 33	
		Discount, 25 cents per 1,000 feet	3 93	
				31 40
Feb. 6.		Metropolitan Railroad Company:		
		240 car tickets		10 00
Jan. 12.		Adams Express Company:		
		1 box to G. C. Moody, Dakota	9 85	
26.		1 box from Boston, Department of Justice	2 25	
				12 10
2.		Western Union Telegraph Company:		
		Telegraphing for office of Attorney-General for January, 1880		64 96
Feb. 14.		Abraham Abraham:		
		Sawing and stowing ½ cord wood		1 00
17.		T. A. James:		
		Lettering "Department of Justice"		10 00
		H. Winfield:		
		Sawing and splitting ½ cord wood	1 50	
		Sawing and stowing ½ cord wood	1 00	
				2 50
18.		Henry Brooks:		
		9 cords of oak wood, at $5	45 00	
		1 cord pine wood	4 75	
				49 75
12.		James Talty:		
		Cleaning out water-closet in Attorney-General's Office		3 00

1879.				
Aug.	22.	W. S. Thompson:		
		Hair-brush, $2; comb, 65 cents	$2 65	
1880.				
Feb.	20.	Benzine, 10 cents	10	
				$2 75
		Western Union Telegraph Company:		
		Telegraphing for office of Solicitor of Treasury for January, 1880		8 85
	26.	Washington and Georgetown Railroad:		
		Fare tickets		10
	27.	J. M. Judd:		
		6 mileage and distance tables, 25 cents		1 50
Mar.	1.	Charles H. Lee:		
		Salary as driver department carriage for February, 1880		67
1879.		John H. Magruder:		
Oct.	18.	2 dozen matches, 25 cents	$0 50	
	23.	1 dozen whisks, $3; (November 20) 2 dozen matches, 50	3 50	
Nov.	24.	2 coal hods, 75 cents	1 50	
Dec.	9.	1 dozen wax-tapers, $3	3 00	
	24.	1 feather duster	4 00	
1880.				
Jan.	19.	1 silver brush, 50 cents	50	
	28.	2 dozen matches, 25 cents	50	
	28.	2 brushes, $2.50; (27) 1 bottle oil, 90 cents	3 40	
				16 90
		National Republican:		
		Subscription from November 1 to March 1, inclusive (Solicitor Treasury's Office)		2 00
Mar.	1.	Margaret Linkins:		
		Sweeping and cleaning for February, 1880 (Solicitor Treasury's office)		20
March	1.	Mary Harrison:		
		Washing during February, 9½ dozen towels, at 50 cents. (Solicitor Treasury's Office.)		4 75
		A. R. Lander:		
		Cleaning, putting screws, and repairing French clock		5 00
Feb.		Washington Gas Light Company:		
		11,300 feet gas, from February 1 to March 1, 1880, at $2,25 per 1,000 feet	25 43	
		Discount 25 cents per 1,000 feet	2 83	
				22 60
March	5.	George Herbert:		
		Subscription to London Weekly Times, 1 year to 6th February, 1881		5 00
		Western Union Telegraph Company:		
		Telegraphing for office of Attorney-General for February		44 40
Feb.	13.	Atlantic and Pacific Telegraph Company:		
		Telegraphing for Attorney-General's Office		2 04
March	13.	Metropolitan Railroad Company:		
		240 car tickets		10 00
		James Talty:		
		4 lava gas burners, 20 cents	80	
		1 large silver-plated basin cock	3 50	
		Silver-plated basin chain	25	
		Repairing steam radiators, gas fixtures, wash-basin faucets, making new connections to Attorney-General's room, &c	7 50	
		2 2-inch patent ball-traps	7 00	
		2 2-inch brass calking-thimbles	2 50	
		10 pounds solder, $3, 6 pounds ½-inch lead pipe, 90 cents	3 90	
		1 large Bedfordshire urinal	7 50	
		1 brass thimble, 40 cents, 14-inch double hub, $1.25	1 65	
		3 feet galvanized pipe	60	
		1 finisher stop-cock	1 75	
		Straps, screws, putty, and plaster of Paris	25	
		1 3-inch and 2-inch double hub, $1, 2 elbows, 30 cents	1 30	

1880.		James Talty—Continued:		
		1 nipple	$0 15	
		Repairing leaks in soil-pipe, putting new trap water-pipe to wash-basin, taking out old pipe of urinal, putting new waste-pipe and trap to urinal, lining under urinal, lining supply to urinal, &c	24 00	
		29¼ pounds 2-inch lead pipe	4 38	
		Sheet-lead for lining urinal	2 50	
				$69 53
		Washington Law Reporter:		
Mar.	17.	1,000 copies Washington Law Reporter		40 00
		Henderson Winfield:		
		Cutting and stowing 1 cord of wood		2 00
		H. Winfield:		
	20.	Cutting and stowing 1 cord wood	2 00	
		Splitting ½ cord wood	50	
				2 50
		Henry Brooks:		
		4½ cords of wood, at $5		22 50
		James Talty:		
	19.	12 feet best gas tubing, gum ferrule, goose-neck, connecting socket, fitting tubing, and repairing gas-leak		7 00
		Metropolitan Railroad Company:		
	26.	Car tickets		10 00
		Richard Gasch:		
		Fitting a key to the front door		60
		Western Union Telegraph Company:		
		Telegraphing for office Solicitor Treasury for February, 1880		7 83
		Charles H. Lee:		
	31.	Salary as driver department carriage for March		71 50
		Henry Coleman:		
		Washing towels for quarter ending 31st March, 1880		36 00
		Margaret Linkins:		
		Sweeping and cleaning office Solicitor Treasury for March, 1880		20 00
		Mary Harrison:		
		Washing towels for March, 12 dozen, at 50 cents per dozen (Solicitor Treasury's office.)		6 00
		Hiram Michaels:		
		Money expended for car tickets in March		2 25
		E. W. Woodruff:		
Apr.	1.	2⅜ dozen file holders, walnut fronts, size 10 by 4½ by 12, at $10 per dozen		26 67
		P. R. Thomas:		
		12 panes glass cleaned		1 00
		Washington City post-office:		
		Box rent, postage, &c., from January 1 to March 31, 1880		2 79
		Great Falls Ice Company:		
Jan.	31.	2,950 pounds ice, at 35 cents	10 32	
Feb.	28.	2,575 pounds ice, at 35 cents	9 01	
Mar.	31.	2,900 pounds ice, at 35 cents	10 15	
				29 48
		John Cherry, Jr.:		
		Services as extra night watchman during December, 1879		25 00
		Washington Gas Light Company:		
		12,000 feet gas from March 1 to April 1, 1880, at $2.25	27 00	
		Discount 25 cents per 1,000 feet	3 00	
				24 00
		Adams Express Company:		
Feb.	2.	1 package from Saint Louis	50	
Mar.	1.	1 package from New York, A. J. Bentley	30	
	5.	1 package from Boston, Attorney-General	90	
	20.	1 package papers from Charleston, S. C	50	
	29.	1 package from Department of Justice	30	
	31.	1 package to J. W. Barton, New York	75	
				3 25

1880.		H. N. Barlow:		
Feb.	24.	To 2 gilt painted tablets, "Taft & Clifford," $1.50	$3 00	
Mar.	31.	1 gold frame to portrait of W. Wirt	35 00	
		1 gilt tablet (W. Wirt)	1 50	
		Cleaning and varnishing portrait of William Wirt	5 00	
				$44 50
		Conrad Becker:		
Jan.	—.	To repairing whip	35	
Feb.	5.	New flap on, and repairing mail bag	2 75	
		Lettering, 50 cents, (9) repairing large mail bag, 85 cents.	1 35	
	9.	Top to whip	75	
	21.	Covering whip handle	75	
		1 rubber storm, driver's, coat	6 75	
		2 leather halters and straps, $2.75	5 50	
		2 rubber horse covers, $6.75	13 50	
		2 rubber horse hoods, $3.50	7 00	
				38 70
		F. A. Fill:		
Mar.	31.	3 months' subscription for Washington Star, January 1 to March 31.		2 25
		Henry Brooks:		
Apr.	5.	6 cords hard wood, $5		30 00
		National Capitol Telephone Company:		
		Telephonic exchange service and rental of apparatus for the quarter ending April 1, 1880		12 50
		Metropolitan Railroad Company:		
	8.	240 car tickets, 4½ cents		10 00
		A. P. McElroy:		
Apr.	—.	17-inch gold frame for portrait of John Y. Mason	40 00	
		Changing pictures and wire	2 25	
				42 25
		Western Union Telegraph Company:		
Mar.	1.	Telegraphing for office of Attorney-General for March, 1880		112 73
		The New York Herald:		
Apr.	9.	Subscription Daily Herald 1 year from date		10 00
		Daniel Scott:		
	10.	7½ days' labor, $1.50 per day		11 25
		John H. Taylor:		
	10.	7½ days' labor, $1.50 per day		11 25
		J. G. Weaver:		
	10.	Lining water-closet and lumber	22 50	
		5 shades, $3	15 00	
		Ropes to 4 windows, $1.50	6 00	
				43 50
		John Dixon:		
	23.	Painting and kalsomining Attorney-General's room	46 00	
		Room No. 7, $30, and room 13, second floor, $25	55 00	
				101 00
		James Talty:		
		Rebronzing, rebuilding, and repairing slide chandelier in Attorney-General's office	15 00	
		1 opal globe	40	
		Examining pipes for odor, cleaning out wash-basin, erecting scaffold to hang chandelier, hauling scaffold, &c	18 00	
				33 40
		H. Winfield:		
		Cutting and stowing ½ cord of wood		1 00
		John H. Taylor:		
		4½ days' services as laborer, $1.50 per day		6 75
		The New York Times:		
	8.	12 months' subscription to daily, from April 9, 1880, to April 8, 1881		12 00
		Metropolitan Railroad Company:		
	23.	240 car tickets		10 00

1880.		J. G. Weaver:		
Apr.	23.	Taking down and hanging 4 lambrequin curtains, 75 cents; taking up 3 rooms matting, $1.25	$6 75	
		Moving furniture of 3 rooms, 75 cents	2 25	
		Hanging 20 oil paintings	5 00	
		Hanging 8 photographs, 12½ cents	1 00	
		3½ pounds copper wire for above	2 15	
		Making lattice for water-closets	3 00	
		Repairing window ropes	1 50	
				$21 65
		S. J. Haislett:		
		Covering 6 awnings, $27, putting up 31 awnings, $1.65	31 65	
		175 hooks, 60 cents, 3 blocks, 60 cents, 30 screws, 10 cents	1 30	
		3 cleats	30	
				33 25
		Horace Haight:		
	27.	Painting and kalsomining		35 00
		Judd & Detweiler:		
		50 brief No. 238, 4 pp		5 00
		Charles H. Lee:		
		Salary as driver department carriage for April		69 20
		A. P. McElroy:		
	30.	Regilding 15 frames and varnishing portraits as per agreement, $13 each		195 00
		Mary Harrison:		
		Washing for month of April, 10 dozen towels, 50 cents per dozen (Solicitor Treasury's office)		5 00
		Margaret Linkins:		
		Cleaning and sweeping office of Solicitor of Treasury for month of April, 1880		20 00
		J. G. Weaver:		
May	1.	Taking up and cleaning 23 carpets, $3	69 00	
		Putting down 77 yards matting, 3 cents	2 31	
		Varnished and cleaned oil cloth in hall	2 50	
				73 81
		Western Union Telegraph Company:		
Mar.	1.	Telegraphing for office of Solicitor of Treasury for March, 1880		12 73
		Birckhead & Mishaw:		
		One grained alcove case for library	105 00	
		2 grained book-cases	35 00	
				140 00
		John H. Taylor:		
		Cleaning paint and scrubbing oil cloths		1 50
		Washington Gas Light Company:		
		14,200 feet gas consumed from April 1 to May 1, 1880, $2.25 per 1,000 feet	31 95	
		Discount 25 cents per 1,000 feet	3 55	
				28 40
		Metropolitan Railroad Company:		
May	4.	240 car tickets		10 00
		Western Union Telegraph Company:		
Apr.	1.	Telegraphing for office of Attorney-General for April, 1880		181 65
		W. B. Moses:		
	15.	4 suits leather lambrequins and cornices, $49	196 00	
		84 yards matting, 60 cents	50 40	
		63 yards matting, 50 cents	31 50	
		43 yards matting, 50 cents	21 50	
		Laying 190 yards, 3 cents	5 70	
		3 pieces matting binding, 75 cents	2 25	
				307 35
		Horace Haight:		
May	7.	Painting 1 flight of steps		5 00
		John H. Taylor:		
	8.	2½ days' work, $1.50 per day		3 75

1880.		James Talty:		
Apr.	23.	Taking down gas fixtures and pipe in library	$3 00	
	24.	Repairing 2 water-closets on first floor	4 50	
May	5.	1 gas fixture, with globes	8 50	
		3 feet bronze casing-pipe, 50 cents	1 50	
		7 feet gas-pipe, 15 cents, $1.05; 3 fittings, 15 cents, 45 cents	1 50	
		4 rings, 10 cents, 40 cents; 6 hooks, 5 cents, 30 cents	70	
		2 scroll globes, 60 cents	1 20	
		Extending gas-pipe and hanging gas-fixtures in library,	4 50	
				$25 40
		John Dixon:		
	8.	Whitewashing a part of brick wall at the Department of Justice.		5 00
		Hooe, Brother & Co.:		
		4 furniture cloths for library, 12½ cents		50
		Baltimore and Ohio and American Union Telegraph Companies:		
		Telegraphing for Attorney-General's Office, September, March, and April		2 79
		S. J. Haislett:		
	13.	1 window-awning		5 50
		Perry & Brother:		
		2½ dozen towels, $1.50		3 75
		John Taylor:		
May	15.	To cleaning fire-places, grates, &c		1 50
		E. F. Andrews:		
Apr.	27.	To 1 portrait of John Y. Mason		350 00
		Washington and Georgetown Railroad Company:		
May	18.	To car tickets		10 00
		The National Capital Telephone Company:		
May	15.	To telephonic exchange service and rental of apparatus at Treasury Department for the year ending May 15, 1881. (Solicitor of Treasury)		46 00
		Charles H. Lee:		
		Salary as driver department carriage for May, 1880		71 60
		Jessie H. Klopfer:		
		To 18 days' work in transferring books from alcoves and cleaning books in the library, at $2 per day		36 00
		Margaret Linkins:		
		To sweeping and cleaning office Solicitor Treasury for May		20 00
		Mary Harrison:		
		Washing 12 dozen towels, at 50 cents per dozen	6 00	
		Furnishing tape and putting loops on 2½ dozen towels	1 25	
		(Solicitor Treasury's office.)		7 25
		Western Union Telegraph Company:		
		Telegraphing for office of Solicitor of Treasury for April		25 55
		A. P. McElroy:		
May	29.	To varnishing portraits		15 00
		Henry Brooks:		
	15.	To 3½ cords oak and hickory wood, at $5		17 50
		S. J. Haislett:		
		Repairing flag		2 25
		National Republican:		
		To subscription from March 1, 1880, to May 31, 1880		1 50
		(Solicitor Treasury's office.)		
		Washington Gas Light Company:		
		To 9,200 feet gas consumed from May 1 to June 1, 1880, at $2.25 per 1,000 cubic feet	20 70	
		Discount 25 cents per 1,000 feet	2 30	
				18 40
		Western Union Telegraph Company:		
		Telegraphing for office of Attorney-General for May		117 25

1880.		S. J. Haislett:		
May	15.	To 1 window awning		$4 50
		John H. Magruder:		
Mar.	6.	To ½ dozen whisk brooms	$2 00	
	13.	To 2 dozen parlor matches	50	
Apr.	8.	To 1 dozen tapers	2 25	
	8.	To 2 dozen matches, 30 cents	60	
	12.	To 1 chamois skin	75	
		2 muck brushes, 50 cents	1 00	
	17.	1 duster, 50 cents; 1 long sweep, $1.75	2 25	
May	12.	1 bucket, 20 cents; (June 1) 2 dozen matches, 50 cents.	70	
				10 05
		J. G. Weaver:		
June	11.	To hanging 1 door	75	
		Fixing 2 awnings	50	
		Fixing 1 window	1 50	
				2 75
		G. O. Freeman & Co:		
	19.	To 1 dozen ink extractors		3 50
		Charles H. Lee:		
		Salary as driver department carriage for June, 1880		69 20
		Henry Coleman:		
		To washing		5 50
		The National Capital Telephone Company:		
		To telephonic exchange service and rental of apparatus used at Freedmen's Bank building, Pennsylvania avenue, for quarter ending June 30, 1880		12 50
		Mary Harrison:		
		To washing 14 dozen towels, at 50 cents per dozen (Solicitor Treasury's office)		7 00
		Margaret Linkins:		
		Sweeping and cleaning Solicitor Treasury's office for June		20 00
		Washington Gas Light Company:		
June.		7,300 feet gas, consumed from June 1 to July 1, 1880, at $2.25 per 1,000 feet	16 43	
		Discount 25 cents per 1,000 feet	1 83	
				14 60
		Western Union Telegraph Company:		
		Telegraphing for office of Attorney-General for June		96 05
		Great Falls Ice Company:		
Apr.	30.	2,800 pounds ice	14 00	
May	31.	3,075 pounds ice	15 37	
June	30.	4,100 pounds ice	20 50	
				49 87
		Western Union Telegraph Company:		
		Telegraphing for office of Solicitor of Treasury for May, 1880		23 55
		Washington City post-office:		
		Postage on Letters, &c., from April 1 to June 30, 1880		1 10
		Baltimore and Ohio and American Union Telegraph Company:		
June.		Telegraphing		50
1879.		Leadingham & Co.:		
July	31.	To board 2 horses 1 month from July 1 to 31, 1879		50 00
		Murray & Barker:		
	1.	2 shoes	1 00	
	12.	2 shoes	1 00	
	19.	2 shoes	1 00	
	21.	2 removes	50	
	26.	4 shoes	2 00	
				5 50
		Leadingham & Co.:		
Aug.	22.	Board 1 horse	18 33	
	31.	Board 1 horse	25 00	
				43 33

1879.		Leadingham & Co.:		
Sept.	27.	3 days' board 1 horse	$2 50	
Oct.	1.	1 month's board 1 horse	25 00	
				$27 50
		Murray & Barker:		
Aug.	4.	Removing 2 shoes	50	
	18.	4 shoes	2 00	
	28.	4 shoes	2 00	
				4 50
		Murray & Barker:		
Sept.	27.	4 shoes		2 00
		Thomas Taylor:		
Oct.	1.	Medical services to brown horse		20 00
		Peter Shenck:		
	4.	Pasturing 1 horse from August 23 to September 28		7 00
		Murray & Barker:		
	3.	4 shoes	2 00	
	16.	2 removes	50	
				2 50
		Leadingham & Co.:		
	31.	2 horses' board, from October 1 to October 31, at $25 each		50 00
		John McDermott & Bros.:		
July	2.	Taking out division front and putting on backs	1 25	
		Washing and putting in some linings	2 50	
		Tightening hub-bands	25	
Aug.	20.	New singletree bolt	30	
	23.	New singletree cleaves	50	
		Shifting springs, 3 new bolts	1 00	
		Repairing shaft iron and clips	75	
		2 gums in shaft heads	75	
				7 30
		Murray & Barker:		
Nov.	1.	4 shoes	2 00	
	7.	2 shoes	1 00	
	14.	1 remove	25	
	22.	2 shoes	1 00	
	24.	2 removes	50	
				4 75
		John McDermott & Bros:		
Nov.	11.	To new large duck apron with straps	5 75	
	20.	Reparing glass frames and covers	1 50	
		Putting in front	1 25	
		Reparing inside linings	1 75	
		Putting on tire and bolts	1 50	
		Axle washers	1 00	
	25.	New steel tire and bolts	4 75	
		Reparing spokes and felloes	1 00	
		8 axle washers	1 00	
				19 50
		Leadingham & Co.:		
Dec.	1.	2 horses to board 1 month		50 00
		Leadingham & Co.:		
	31.	2 horses' board for 1 month		50 00
		Murray & Barker:		
	8.	To 1 remove	25	
	15.	4 shoes	2 00	
	17.	4 shoes	2 00	
	31.	4 removes sharp	1 25	
				5 50
		John McDermott & Bros.:		
Dec.	17.	Taking out and putting in front and back	2 00	
	29.	4 new hickory rims on wheels, and repairing spokes	12 00	
		New spokes, $3; 4 new steel tires, $15	18 00	
		40 tin bolts, $2; 8 axle washers, $1	3 00	
		Repairing gearing	3 00	
				38 00

1879.		Lutz & Co.:		
July	1.	1 set bandages	$1 75	
		1 bottle hoof liniment	75	
		1 ring bit	2 50	
	2.	Repairing bridle	50	
	10.	1 leather flank fly-net	5 00	
Aug.	13.	2 linen sheets	5 00	
		2 surcingles	2 00	
	19.	1 pair rosettes	1 00	
Nov.	5.	2 whips, $5; repairing pump, $1	6 00	
Dec.	1.	Altering collar	1 00	
	6.	Top on whip	50	
				$26 00
		Conrad Becker:		
Dec.	11.	1 horse cover to order	9 50	
		Repairing set single harness	3 50	
		1 new front on bridle	75	
				13 75
1880.		Leadingham & Co:		
Feb.	1.	2 horses' board from January 1, 1880, at $25		50 00
		Murray & Barker:		
Jan.	11.	2 removes	50	
	13.	6 shoes and 2 removes, sharp	3 63	
	31.	2 shoes	1 00	
				5 13
		Arthur Nattans:		
Feb.	18.	1 bottle horse liniment		1 00
1879.		W. S. Thompson:		
Dec.	14.	Tincture aconite root		50
1880.		Leadingham & Co.:		
		2 horses to board 1 month		50 00
		Murray & Barker:		
Feb.	3.	4 removes, sharp	1 25	
	14.	1 remove	25	
	17.	4 shoes	2 00	
				3 50
		Leadingham & Co.:		
Apr.	1.	Keep of 2 horses from March 1 to March 31, 1880		50 00
		Murray & Barker:		
Mar.	17.	4 shoes, $2; (22) 4 shoes, $2		4 00
		Conrad Becker:		
Jan.	2.	Repairing harness	1 25	
Feb.	2.	Repairing harness	1 00	
		2 new back bands	2 50	
				4 75
		Andrew J. Joyce:		
July	5.	Set 1 tire	1 25	
		1 tire-bolt and felloe-plate	25	
				1 50
		Murray & Barker:		
Apr.	14.	4 shoes	2 00	
	15.	4 shoes and leathers	2 25	
	26.	2 removes	50	
				4 75
1880.		John McDermott & Bros.:		
Apr.	3.	To repairing door, lock, hinges	6 75	
		To repairing spring curtain band, cushion, and linings.	2 50	
	8.	Taking out shifting front and putting in back, and tacking of linings	2 00	
		4 bolts, repairing bolts and clips	2 50	
		Set of axle washers and repairing boxes	1 50	
				15 25
		Leadingham & Co.:		
May	1.	To 2 horses to keep 1 month		50 00

1880.		Arthur Nattans:		
Apr.	17.	To gum camphor	$3 00	
		Powdered borax	1 00	
				$4 00
		Murray & Barker:		
May	5.	To 2 shoes	1 00	
	22.	To 4 shoes	2 00	
				3 00
		Leadingham & Co.:		
June	1.	2 horses board, 1 month		50 00
		John McDermott & Bros.;		
May	10.	New large size gum duck apron	5 50	
	26.	New summer lining in department carriage	16 50	
	28.	Repairing wheels, $2; putting on 4 tires, $4	6 00	
		30 new tire bolts, $1.50; wedging 4 boxes, $1.50	3 00	
		New bolts and tightening up gearing	2 50	
				33 50
		John McDermott & Bros.:		
June	—.	Repairing wheels, $2.50; repairing shafts, $1	3 50	
		Putting on and countersinking 4 tires	4 50	
		Repairing bands	1 50	
		Repairing king bolt and transom plate	1 75	
		Repairing shaft irons, new heads	1 50	
		16 new bolts	3 75	
		Repairing steps	1 25	
		Repairing axle washers, $1.25; repairing springs, $2.75	4 00	
		Repairing gearings	2 50	
		Repairing leather of dash	1 50	
		New rocker covers	1 25	
		Repairing inside lining and shaft leathers	2 25	
		Repairing and wedging axle boxes	1 50	
				30 75
		Conrad Becker:		
Apr.	3.	Repairing harness with reins and bridle	23 50	
	22.	Washing, oiling, and renovating harness	26 75	
May	12.	Repairing horse blankets, breechings, and harness	24 50	
	21.	Repairing harness, saddles, with collar and hames	18 10	
June	2.	Blacking harness and repairing truss martingales	13 75	
	26.	Repairing belly bands, hitching straps and halters	8 90	
				115 50
		Leadingham & Co.:		
		2 horses' board from June 1 to 30, at $25		50 00
		Murray & Barker:		
	1.	4 shoes	2 00	
	25.	4 shoes	2 00	
				4 00
1879.		J. G. Weaver:		
July	24.	Making 2 document cases, $22.50		45 00
		Edward Sturges:		
	8.	Refitting Department of Justice with new patent cut globes and lava tip burners complete		75 83
		George Watts & Co.:		
	28.	1 enameled cooler and stand		7 75
		J. G. Weaver:		
Aug.	15.	Making shelf for mirror	1 50	
Sept.	23.	Case of drawers	7 00	
Oct.	6.	Mending 2 towel racks	50	
		Altering door, &c	1 50	
		Repairing desk and castors on same	2 50	
				13 00
		J. G. Weaver:		
	18.	Polishing, covering, and castors, 2 desks		30 00
	29.	Making till division, secretary	75	
		Mending 2 chairs, 75 cents	1 50	
		Covering incline desk slope	2 50	
		1 set castors on desk	2 00	
				6 75
		H. O. Towles:		
Aug.	9.	Revolving stool		3 50

1879.		Holmead & Co.:		
Oct.	4.	2 cuspidors	$4 00	
		1 spittoon	50	
				$4 50
		H. N. Barlow:		
		1 frame	6 80	
		1 $\frac{49}{60}$ first French glass, double thick	9 50	
		Mounting map	2 00	
				18 30
		J. G. Weaver:		
Nov.	14.	Repairing and covering 2 desks, at $15		30 00
		J. G. Weaver:		
		Repairing and covering 1 set furniture		50 00
		J. G. Weaver:		
		1 lock, $1.50; seating 2 chairs, $3.50	5 00	
		Cushioning 1 chair, $3.50; 4 shades, $10	13 50	
				18 50
		E. F. Simpson:		
		No. 3 Harvard	27 00	
		1 zinc board, $2; 1 C. T. F. board, $2	4 00	
		Poker, 25 cents; blk. stove, $1	1 25	
		Putting up stove, with 10 pieces mica, 3 joints 6-inch pipe, elbow and damper	3 50	
				35 55
		William S. Mitchell:		
Oct.	8.	74 yards cocoa matting	48 10	
		24½ yards tapestry carpeting	22 05	
	9.	2¼ yards cocoa matting	1 30	
	4.	1 Smyrna rug, $10; 1 Smyrna mat, $15	25 00	
Dec.	13.	17¼ yards tapestry, at $1	17 25	
		1 tapestry mat, $1; 1 tapestry mat, $1.50	2 50	
		1 tapestry mat, $1; 1 Smyrna mat, $2	3 00	
				119 20
		J. G. Weaver:		
Nov.	30.	Making and covering 1 foot-stool	2 50	
Dec.	1.	Fixing locks and keys on desks	1 50	
	6.	Making and covering 1 desk slope	5 50	
		Making and covering 1 desk screen	5 00	
		Covering and repairing 1 desk	7 50	
	12.	Repairing chair, $1; fixing desk, $1	2 00	
		Making pigeon-hole case	7 50	
		Repairs on pigeon-hole case	3 00	
	24.	Repairing and altering set furniture, imitation leather, viz: 1 sofa, 1 lounge, 4 side-chairs, and 2 arm-chairs	72 00	
				106 50
		H. O. Towles:		
Nov.	12.	1 revolving chair		7 50
1880.		J. G. Weaver:		
Jan.	10.	Making walnut tray	3 50	
		5 ventilators, $3.75	18 75	
		Fixing hat-rack and mirror	50	
				22 75
		J. G. Weaver:		
Feb.	5.	Repairing 1 chair	1 00	
		Making 2 glass ventilators, $3.75	7 50	
	19.	Making 1 ink walnut tray	4 50	
Mar.	2.	Repairing 1 file-holder	50	
		Repairing 6 chairs, 50 cents	3 00	
		Upholstering 2 sofas, imitation leather, $22	44 00	
		Upholstering 2 lounges, imitation leather, $22	44 00	
		Upholstering 5 side-chairs, $3.50	17 50	
		Upholstering 2 arm-chairs, $7	14 00	
		Upholstering 1 Turkish chair	27 50	
		Repairing 1 sofa, $2; repairing 1 wardrobe door, $2.50	4 50	
		Repairing 1 desk	50	
		Making pine trestle table	7 50	
				176 00
		J. G. Weaver:		
April	3.	Repairing book-rest	50	
		Repairing 3 chairs, at 50 cents	1 50	
		Repairing 1 chair	1 25	
		Upholstering sofa and 4 chairs	32 00	
				35 25

1880.		J. G. Weaver:		
Apr.	23.	Covering and repairing 1 desk	$12 00	
		Repairing and varnishing revolving book-case	3 50	
		Varnishing 1 table, 75 cents; varnishing 3 small tables, at 50 cents, $1.50	2 25	
		Varnishing 1 fire-screen	25	
		Varnishing 1 inclosed wash-stand	1 75	
		Repairing and varnishing 1 standing desk	1 75	
		Covering and repairing desk	3 50	
		Upholstering sofa	20 00	
		Repairing 2 chairs—1 at $1.25; 1 at $1.75	3 00	
				$48 00
		J. G. Weaver:		
May	1.	Repairing 3 chairs and seating same		3 25
		J. G. Weaver:		
	8.	Upholstering 1 chair, imitation leather	10 00	
		Repairing and seating 3 chairs	3 50	
				13 50
		Birckhead & Mishaw:		
	14.	Removing alcove case in library	3 00	
		Furnishing and putting in uprights in 35 panels	10 50	
		Renovating alcove and side cases in library	13 00	
		Altering and recovering library table	1 50	
				28 00
		Wash. B. Williams:		
	28.	1 walnut revolving chair	7 50	
		1 French glass	6 00	
		1 leather lounge	35 00	
				48 50
		J. G. Weaver:		
June	11.	Making 3 blind-doors	33 75	
		Repairing 2 chairs	3 50	
		1 set castors	1 75	
		Fastening cases to wall	1 50	
		Fixing revolving book case	1 50	
		Castors on chair	50	
				42 50
1879.		Mary E. Mann:		
July	1.	Appleton's Annual Cyclopedia, new series, for the year 1878, vol. 3.		6 00
		G. N. Ryder:		
Oct.	7.	16 parts "Earth and its Inhabitants"		8 00
		American News Company:		
	18.	Vol. 1 of book entitled "Around the World with General Grant".		8 00
		James J. Chapman:		
	25.	Harper's Latin Dictionary		9 50
		D. B. Canfield & Co.:		
Nov.	—.	American Law Register from January, 1878, to January, 1880		10 00
		T. & J. W. Johnson:		
July	19.	Robinson & Joseph's Digest, part 16	2 75	
Oct.	4.	1 Upper Canada Reports—Queen's Bench, vol. 43; Com. Pleas, vol. 29; Chancery's, vol. 25; Appeals, vol. 2—4 volumes, at $6.50	26 00	
	6.	1 Robinson & Joseph's Digest, part 17	2 75	
				31 50
		M. E. Mann:		
		1 copy of Life and Letters of Admiral Farragut		4 00
		James J. Chapman:		
Dec.	29.	1 Webster's Dictionary		10 00
		E. M. Whittaker & Son:		
		Subscription North American Review for 1880	5 00	
		1 American Almanac, 1880	1 50	
				6 50
		Little, Brown & Co.:		
Dec.	—.	1 Hennen's Louisiana Digest, 2 vols	12 00	
		1 Alabama Reports, vol. 5	15 00	
				27 00

1880.	Little, Brown & Co.:		
Dec. —.	1 Simmon's Wisconsin Digest, vol. 3	$6 00	
	1 Stiles Iowa Digest, vol. 3	7 00	
	1 Colorado Reports, vol. 3	6 75	
	1 Texas Reports, vol. 48	6 00	
	1 Texas Appeals Reports, vol. 5	5 00	
	1 Connecticut Reports, vol. 45	4 50	
	1 Maine Reports, vol. 68	4 25	
	1 Missouri Appeals Reports, vols. 4 and 5	10 00	
	1 Nebraska Reports, vol. 8	3 00	
	1 Barbour's Reports, New York, vol. 67	4 50	
	1 Ohio State Reports, vols. 32 and 33	5 00	
	1 Haskell's Reports, Tennessee, vol. 12	4 00	
	1 Sheldon's Buffalo Reports, vol. 1	3 00	
	1 Martin's Louisiana Reports, vol. 9	4 50	
		———	$73 50
	W. H. & O. H. Morrison.		
	1 Pomeroy on Contracts	4 38	
	1 Illinois Reports, vol. 27	2 75	
	1 Alabama Reports, vol. 50	5 50	
	2 Indexes to Supreme Court Reports	10 00	
	1 each Indiana Reports, vols. 60 and 61	7 75	
	1 Wisconsin, vol. 45	3 00	
	1 New Jersey Equity, vol. 30, $3.50; 1 Missouri, vol. 67, $3.50	7 00	
	1 New York Court of Appeals, vol. 73	1 75	
	1 Law Review, July	1 25	
	1 each North Carolina, vols. 79 and 80	9 00	
	1 Massachusetts Reports, vol. 125	4 30	
	1 Executive Departments	4 00	
	1 California Reports, vol. 52	3 75	
	1 United States Digest, vol. 9	5 50	
	1 Wait's Actions, vol. 7	6 00	
	1 Supreme Court of New York, vol. 74	2 75	
	1 Brown on Trade-Marks	5 50	
	1 Alabama, vol. 57, $5.75; 1 Alabama, vol. 58, $6.25	12 00	
	1 Life and Writings of Curtiss	5 75	
	1 Life of Webster	3 00	
	1 Abbott's Law Dictionary	10 00	
	1 each New York Supreme Court, vols. 43 and 44	12 00	
	1 Von Holtz History, 2 vols	7 50	
	1 Kentucky Reports, vol. 14, $5.00; 1 New York Reports, vol. 74, $1.50	6 50	
	1 Missouri Digest, vol. 3	7 00	
	1 each Wait's Actions, vols. 4 and 5	13 00	
	1 Illinois Reports, vol. 88	2 75	
	1 each Pennsylvania Reports, vols. 86 and 87	9 00	
	1 Alabama, vols. 59 and 60	11 50	
	1 Grattan, vol. 30	6 00	
	1 Encyclopædia, vol. 10	8 00	
	1 Wisconsin, vol. 46	2 75	
	1 Texas, vol. 50, $6.50; 3 Nos. Law Register, $1.50	8 00	
	1 Maryland Reports, vol. 48, $5; 1 Law Review for January, 50 cents	5 50	
	1 Froude's Cæsar	2 50	
	1 Repelyer's Federal Digest	8 00	
	1 Hughes's Reports, vol. 3	6 50	
	1 Illinois Reports, vol. 89	2 75	
	1 Struggle for Law	1 50	
	1 Massachusetts Reports, vol. 126	3 50	
	1 New Jersey Equity, vol. 31	3 50	
	1 Law Review for February	50	
	1 New York Court of Appeals, vol. 75	1 50	
	1 Mills on Eminent Domain	4 75	
	1 Jarmin on Wills, vol. 1	5 50	
	1 Louisiana Reports, vol. 31	8 00	
	1 Vermont, vol. 51	4 50	
	1 California, vol. 53	3 25	
		———	270 68

1879.		Robert Beall:			
Dec.	18.	1 British Almanac and Companion for 1880	$2 00		
1880.					
Feb.	10.	1 Statesman's Year Book, 1880	3 00		
					5 00
		Little, Brown & Co.:			
Jan.	23.	1 Colorado Reports, vol. 4	6 75		
		1 Illinois Reports, Bradwell's Appendix, 3 vols	10 50		
		1 Indiana Reports, vol. 62	4 00		
		1 Iowa Reports, vol. 48, at $5; 1 Kansas, vol. 21, at $3.25	8 25		
		1 Michigan Reports, vol. 40	3 25		
		1 New Jersey Reports, Pennington, 2 vols	10 00		
		1 New Jersey Reports, C. E. Green's Chancery, vol. 2	5 00		
		1 New York Reports, Daly's Common Pleas, vol. 7	5 00		
		1 New York Reports, Abbott's New Cases, vols. 5 and 6	9 00		
		1 New York Reports, Howard's Practice, vol. 56	3 00		
		1 Ohio State Reports, vol. 34	2 50		
		1 Pennsylvania, Pearson, vol. 1	5 50		
		1 Tennessee, Baxter, vols. 4, 5, and 6	12 00		
		1 Tennessee, B. J. Lea, vol. 1	4 00		
		1 West Virginia, vols. 12 and 13	9 00		
		1 Texas Appeals, vol. 6	5 00		
		1 New Hampshire, Smith, 1 vol	5 00		
		1 Minnesota, vol. 24	5 00		
		1 Philadelphia, vol. 10	5 00		
					117 75
		Little, Brown & Co.:			
Mar.	3.	1 English Law Reports, 1879, 3 series	30 00		
		Binding 8 vols., ½ calf	12 00		
					42 00
		American News Company:			
	24.	Vol. 2, "Around the World with General Grant"			8 00
		P. H. Cooney:			
Apr.	1.	One set Appleton's Applied Mechanics, 2 vols			15 00
		Little, Brown & Co.:			
		1 English Statutes, 1879, ½ calf			10 00
		H. J. Finley:			
	29.	1 copy Life of Z. Chandler			2 50
		Little, Brown & Co.:			
		1 Brandt Surety, &c	6 00		
		1 Cooley Torts	6 00		
		1 Hirsh Juries	3 38		
		1 Ives's Military Law	4 00		
		1 Minor's Institute, 4 vols	25 00		
		1 Cooper's Reports, 2 vols	12 00		
		1 Ridgeway's Reports, 3 vols	7 50		
		1 Fox Smith, 2 vols. in one	4 00		
		1 Smith & Batty, 1 vol	2 50		
		1 Hudson & Brooke, 2 vols	5 00		
		1 Lloyd & Gould, 1 vol	4 00		
		1 Iowa Reports, vol. 49	5 00		
		1 Michigan Reports, vol. 38 (P. Adams)	3 25		
					87 63
		B. Westerman:			
Feb.	27.	1 Bluntschli Das Beuterecht	1 10		
		½ morocco binding	65		
		1 Brunner Rebfolge System	60		
		½ morocco binding	50		
		1 Bethtmann Hollweig, Civil Process des gemeinen Rechts, vols. 4, 5½, and 6	8 25		
					11 10
		B. Westerman & Co.:			
Feb.	2.	1 Revue Critique de Legislation, 1880			6 00
		B. Westerman & Co.:			
Jan.	17.	1 Vierte jährschrift für Gesetzgebung, 1880			4 50
		The Leonard Scott Publishing Company:			
Apr.	—.	The four Reviews and Blackwood's Magazine for the years 1879, 1880			30 00

1880.				
		A. S. Barnes & Co.:		
Apr.	28.	One year's subscription, 1880, International Review		$5 00
		Houghton, Miffin & Co.:		
		Subscription to the Reporter, vols. 8 and 9, from July, 1879, to June, 1880		10 00
		T & J. W. Johnson & Co.:		
		1 Upper Canada Queen's Bench Report, vol. 44	$6 50	
		1 Ontario Appeals Report, vol. 3	6 50	
		1 Practice Report, vol. 7	6 50	
		1 Grant's Chancery Report, vol. 26	6 50	
				26 00
		Little, Brown & Co.:		
June	3.	1 American Law Review, October, 1878	75	
		1 Colorado Revised Statutes, 1877	6 00	
		1 Connecticut, Swift's Digest, 2 vols	10 00	
		1 Illinois Statutes, 1879	3 00	
		1 Massachusetts Statutes, 1860, and Supplement, vol. 2, 1873–'77	5 50	
		1 Minnesota Statutes, 1878	7 50	
		1 Missouri, Winslow's Code, 1879	5 00	
		1 Pennsylvania, Purdon's Digest, 1875, '78	3 50	
		1 Rhode Island Statutes, Supplement, 1873, '78	4 50	
		1 Texas Code, 1879	8 50	
		1 West Virginia Statutes, 1879, 2 vols	15 00	
		1 Wisconsin Statutes, 1878	6 00	
				75 25
		M. E. Mann:		
	12.	Vol. 4, Appleton's Annual Cyclopædia of the year 1879		6 00
		Little, Brown & Co.:		
	21.	1 Addison's Contracts, 3 vols	12 00	
		1 Anglo Saxon Law	3 50	
		1 Archbold Criminal Practice and Pleading, 2 vols	10 50	
		1 Bigelow's Placita Anglo Normania	3 50	
		1 Burrill's Assignments	5 25	
		1 Byles's Bills	4 88	
		1 Cooley's Const. Law	2 50	
		1 Freedman's Void Judicial Sales	1 50	
		1 Heard's Criminal Law	5 00	
		1 Heard's Criminal Pleading	2 50	
		1 Jones's Railroad Securities	5 25	
		1 Langdell's Cases Equity Pleading	6 50	
		1 Mayne's Damages	5 25	
		1 Mitford & Tyler's Pleading	5 25	
		1 Morgan's Legal Maxims	2 50	
		1 Wade's Notice	5 50	
		1 Wharton's Legal Maxims	2 50	
		1 Brown's Statute Frauds	5 00	
		1 Daniell's Chancery Practice, 3 vols	15 00	
		1 Langdell's Cases Contracts, 2 vols	8 00	
		1 Story's Equity Pleading	5 00	
		1 Lawson's Carriers	5 00	
		1 Bishop's Criminal Procedure, 2 vols	10 00	
		1 Repelyer's New York Digest	6 50	
		1 Bliss's New York Code	8 00	
		1 Colorado Civil Code	2 50	
		1 Thompson Negligence, 2 vols	11 00	
		(Per Adams Express.)		
				159 88
		Little, Brown & Co.:		
	28.	1 Bradwell's Illinois Reports, vol. 4	3 50	
		1 New York Transcript Appeals, 7 vols	21 00	
		1 Pearson's Pennsylvania Reports, vol. 2	5 50	
		1 Preble's Patent Index	5 00	
				35 00
		W. H. & O. H. Morrison:		
		1 Law Review, March	50	
		1 Alabama Reports, vol. 61	5 75	
		1 Mississippi Reports, vol. 50	6 00	
		1 Sanger Reports, vol. 5	6 00	

1880.	W. H. & O. H. Morrison—Continued:		
June 28.	1 Pennsylvania Reports, vol. 88	$4 50	
	1 New York Reports, vol. 76	1 50	
	1 Illinois Reports, vol. 90	3 25	
	1 Law Review, April and May.	1 00	
	1 Wisconsin Reports, vol. 47	3 50	
	1 Nebraska Reports, vol. 9	3 00	
	1 Grattan, vol. 31	6 00	
	13 vols. Wallace	52 00	
	1 Law Review, June	50	
	1 Spears on Law of Extradition	4 50	
	1 Sedgwick on Damages, 2 vols.	12 00	
	1 Shearman & Redfield on Negligence	6 00	
	1 Schouler on Bailments.	5 50	
	1 Bigelow on Bills and Notes	5 50	
	1 Peloubet's Legal Maxims.	2 50	
	1 Poe's Pleading and Practice, vol. 1	8 75	
	1 Daniels on Negotiable Insts., 2 vols	11 00	
	1 Green's Brice's Ultra Vires	6 00	
	1 Hutchison on Carriers	6 00	
	1 Wells on Replevin	5 50	
	1 Damnum Absque Inj	3 75	
	1 Wade on Ret. Law	4 75	
	1 Thompson on Highways	4 00	
	1 Liability of Stockholders	5 00	
	1 Liability on Inter-State Law	4 50	
	1 Liability on Judicial Sales	5 50	
	1 Rapelje's Federal Digest	8 00	
	1 Von Holst Constitutional History, vol. 1	3 50	
	1 Anson on Contracts	3 00	
	1 De Fooz on Law of Mines	3 75	
	1 Maine Reports, vol. 69	4 50	
	1 Abbot's National Digest, vol. 8	6 00	
	1 each South Carolina, 10 and 11	14 25	
	1 Tennessee, vol. 2	4 25	
	1 Tennessee Baxter, vol. 7	4 25	
	1 each Georgia, 59, 60, 61	18 00	
	1 Lieberg's Hermeneutics	3 00	
	1 each Indiana, 63, 64, 65, 66, 67	21 25	
	1 Encyclopædia, vol. 11	8 00	
	1 each West Virginia Reports, 14 and 15	9 00	
	1 Missouri Reports, 49 and 50	10 00	
	1 Hun's Reports, vol. 27	2 7	
	1 Bundy's Justice	4 00	
	1 Wood on Mandamus	3 25	
	1 Abbott's Trial Evidence	6 50	
	1 New York Reports, vol. 77	1 50	
	1 Minnesota, vol. 25	5 00	
	1 each Iowa, 50 and 51	10 00	
	1 Missouri, 68 and 69	8 00	
	1 Oregon, vol. 7	5 50	
	1 Proffate on Notaries	2 46	
	1 Blatchford, vol. 15, $6; 1 Illinois Reports, vol. 91, $2.75	8 75	
	1 New York Supreme Court, vol. 26	2 75	
	1 New Jersey Law, vol. 41	3 50	
		———	378 71
1879.	James J. Chapman:		
July 11.	To 3 dozen Faber's pencils	1 95	
	3 dozen rubber pen-holders, $4.50	13 50	
	2 dozen balls twine, $3.50	7 00	
	60 reams manila, 25 cents	15 00	
	2 dozen quarts black ink, $6	12 00	
	48 gross pencils, assorted	29 50	
	1 dozen extra erasers	6 00	
	2 dozen red and blue pencils	2 40	
	6 bottles mucilage	4 50	
	10 pounds wax, 35 cents	3 50	
	1 ream extra heavy blotting	20 00	
	2 reams extra heavy large manila wrapping	30 00	

1879.		James J. Chapman—Continued:		
July	11.	10 packages pins	$1 00	
		300 large envelopes, assorted	3 50	
		5 reams extra legal cap, $4.50	22 50	
		2 reams note, $2	4 00	
		1,000 white letter envelopes	3 00	
	12.	2 reams royal Irish linen paper, $5	10 00	
		1,000 royal Irish linen envelopes	8 00	
	16.	24 quarts Stephens' ink	24 00	
	22.	2,000 cards	5 00	
		2,000 envelopes, cloth lined, $30.50	61 00	
	23.	1,000 envelopes, hand-cut, 10½x7	14 00	
		5,000 envelopes, cloth, official, $5	25 00	
		10,000 envelopes, $4.50	45 00	
		9 reams letter, ruled, stop pattern, $6.50	58 50	
		5 reams opinion paper, ruled to order, $6.50	32 50	
	26.	11 reams letter, ruled, stop pattern, $6.50	71 50	
	29.	10,000 official envelopes, $4.50	45 00	
		1 ream extra envelope paper	4 25	
			———	$583 10
		Robert Beall:		
July	1.	1 box steel pens	1 50	
		1 dozen rolls ribbon	3 00	
		1 dozen pieces ink erasers	1 00	
		1,000 white seals	3 50	
		¼ ream legal cap	1 25	
		2 balls twine	75	
	2.	1 ream cap paper	5 00	
		½ ream Congress letter	2 00	
		1 ream extra thick letter	5 00	
		2 dozen sheets blotting	2 00	
		1 great gross rubber bands, No. 11	1 75	
		1 great gross rubber bands, 00¼ inch	2 00	
		4 dozen hexagon pencils, 75 cents	3 00	
		3 dozen colored lead pencils, $1	3 00	
		1 dozen steel erasers	6 00	
		2 quarts mucilage	2 00	
		1 ream legal cap	5 00	
		2 bottles Maynard & Noyes' ink	1 00	
		1 bottle red ink	75	
	7.	1 box steel pens	1 00	
	8.	½ ream fine note	2 00	
		8 packages fine note envelopes	2 00	
		½ ream 7 note	1 50	
		1 box No. 5 envelopes	75	
		4 bottles Arnold's crimson ink	80	
	15	1 holder for gold pen	1 25	
		2 gross rubber bands	2 00	
	22.	½ ream fancy note	1 50	
		5 packages envelopes	1 00	
	23.	1,000 note envelopes	3 50	
		2 balls twine, 75 cents; 2 spools tape, $1	1 75	
		1 dozen rubber pen-holders	3 50	
		10 reams waste paper	3 00	
		2 bunches pins	2 50	
		1 box engrossing pens	1 00	
		(For Office of Solicitor of Treasury.)	———	78 55
		James J. Chapman:		
July	16.	10 reams flat-letter, $2.50	25 00	
		12 lbs. roll drawing, 15 cents	1 80	
		2 sheets bristol, 20 cents	40	
		1 penholder and pens	15	
		1 inkstand	90	
	22.	1 dozen sheets blotting	1 00	
		3 quarts M. & N. ink, 75 cents	2 25	
		3 quarts Arnold's fluid, 75 cents	2 25	
		2 bottles red ink, 20 cents	40	
		(For Office of Solicitor of Treasury.)	———	34 15

1879.		Robert Beall:		
Sept.	2.	2 waste-baskets	$2 00	
		3 bottles ink	75	
		1 boxwood ruler	75	
		2 rubber rulers	50	
		2 dozen lead pencils	1 50	
		2 boxes leads	20	
	5.	1 ream Congress letter	4 50	
	6.	1 ball twine	75	
		1 box steel pens	1 25	
	11.	1 box paper and envelopes	2 50	
		1 ream 14 lb. Congress cap	5 00	
		2 quarts mucilage	2 00	
		2 dozen lead pencils	1 50	
	15.	1,000 envelopes	3 50	
	16.	2 dozen sheets blotting board	2 00	
		1 great gross rubber bands	2 50	
		1 box paper fasteners	3 50	
		2,000 official envelopes, $6.50	13 00	
		2 balls of twine	1 50	
		2 boxes pens	2 00	
		2 dozen hexagon pencils	1 50	
		1 letter clip board	75	
	18.	1 dozen sheets granite blotting	1 00	
		1 box steel pens	1 00	
	20.	3 boxes rubber bands	1 50	
		1 scrap book	2 00	
	22.	5 quires note paper	1 50	
		5 packages note envelopes	1 50	
	25.	1 bottle Morgan's mucilage	75	
		(For Office Solicitor of Treasury.)	———	$62 70
		Robert Beall:		
Aug.	1.	1 glass inkstand	75	
	20.	1 rubber penholder	50	
	29.	1 box Gillot's pens, No. 404	1 00	
		2 balls twine	75	
Sept.	2.	2 quarts French B. ink	2 00	
	3.	10 quires fancy note	2 50	
		10 packages fancy envelopes	2 50	
	4.	1,000 letter envelopes	4 00	
		1,000 note envelopes	3 00	
	6.	1 box Gillot's 303 pens	1 25	
	9.	1 box rubber bands	1 50	
	12.	2 spools red tape	1 00	
		1 bottle red ink	50	
		1 ream legal cap	5 00	
		1 box steel pens	1 25	
		(For Office Solicitor of Treasury.)	———	27 50
		James J. Chapman:		
Aug.	1.	3 paste brushes	50	
	20.	2 quires Congress letter, 35 cents	70	
	29.	1 scrap basket	75	
Sept.	2.	1 gross silverine pens	1 00	
	3.	6 memorandum tablets, letter, 50 cents	3 00	
		6 memorandum tablets, note, 25 cents	1 50	
	4.	3 arm rests, $1.25, $3.75; 2 waste baskets, 75 cents, $1.50	5 25	
	6.	5 gross silverine pens, $1	5 00	
		1 dozen penholders	50	
	12.	1 cabinet inkstand, to order	10 50	
			———	28 70
		J. Bradley Adams:		
Oct.	1.	1 Mackinnon pen		5 00
		Robert Beall:		
Oct.	2.	1 box white envelopes	2 50	
	6.	6 glass sponge cups	1 50	
		4 waste paper baskets	4 00	
		1 dozen Faber's pencils, No. 2	75	
		1 ream legal cap	5 00	

1879.				
		Robert Beall—Continued.		
Oct.	6.	1 ream letter paper	$4 50	
	7.	1 ream note paper	3 50	
	9.	2 boxes steel pens	2 50	
		1 ream envelope paper	7 00	
		½ ream foolscap	2 50	
	11.	½ ream manila wrapping paper	4 50	
		4 dozen hexagon pencils	1 50	
	20.	1 box artists' rubber	1 50	
	22.	2 boxes pyramid pins	3 00	
		1 quart French copying ink	1 00	
	27.	1 ream note paper and envelopes	2 00	
		¼ ream linen note	1 50	
		5 packs linen note envelopes	1 50	
		3 rubber pen-holders	1 00	
		1 fine pocket knife	3 50	
		1 memorandum book	50	
		1 rubber pencil	60	
		(For office Solicitor of Treasury).		
			———	$55 85
		J. D. Free, jr.:		
	23.	To 1 tablet		20
		David Lyon:		
	30.	To 2 dozen Lyon & Paterson pens, $21		42 00
		James J. Chapman:		
	6.	To 3 reams flat letter (for office Solicitor of Treasury), $2.50		7 50
		James J. Chapman:		
	3.	To engraving plate	2 00	
		500 cards, printing	6 25	
		1 box eyelets	25	
		1 box eyelets, large	35	
	6.	1 dozen ink and pencil erasers	2 00	
	21.	12 dozen pencils, $9; 6 dozen pencils, $4.50	13 50	
		12 pieces rubber, large	1 80	
		6 pieces ink and pencil erasers	1 80	
		2 arm rests	1 50	
		1 table basket	75	
	22.	1 pair shears	1 00	
		1 knife	2 00	
	23.	6 mucilage stands	7 50	
		3 gross engrossing pens	3 75	
		2 gross curved pens	3 00	
	25.	1 scrap book	1 50	
		6 erasers	2 40	
	27.	½ ream English note	3 00	
		250 English envelopes	2 00	
	27.	1000 manila	2 50	
	30.	3 banker's inks, large	6 75	
	30.	3 banker's inks, small	2 25	
	31.	1 blank book	1 35	
			———	69 20
Nov.	1.	Robert Beall:		
		1 box Dreka's engrossing pens	1 00	
		4 rubber pen-holders	1 25	
	5.	½ ream cream note	2 50	
		250 cream note envelopes	3 50	
		½ ream legal cap	2 50	
		1 ream commercial note	3 00	
		2 dozen pencils, No. 3	1 50	
		1 box steel pens	1 00	
	7.	6 bottles ink, $3; 2 quarts mucilage, $2	5 00	
		10 reams tissue manila	3 00	
		2 dozen pencils, hexagon, No. 2	1 50	
	11.	½ ream 8 p. m. letter	2 50	
	12.	2 boxes pyramid pins	3 00	
	15.	1 thermometer	75	
		1 dozen tablets	1 25	

1879.				
		Robert Beall—Continued.		
Nov.	15.	1 dozen hexagon pencils	$0 75	
	28.	¼ ream French note	1 25	
		5 packages French note envelopes	1 25	
		1 ream letter paper	4 50	
		1 M letter envelopes	3 50	
		(For Solicitor of Treasury's office.)		
			——	$44 50
		J. C. Blair:		
		100 tablets, $8	8 00	
		James J. Chapman:		
	6.	6 dozen pencils	4 50	
		1 glass pen tray	1 00	
	11.	12 dozen swan quills	9 00	
	13.	4 gross curved pens	6 00	
	14.	1 pair shears	50	
		4 pairs shears, leather	6 00	
	15.	1 press fastener	3 00	
	20.	4 records, lettered and indexed to order	12 00	
		1 pair leather-covered shears	1 50	
	25.	1 press, $3; 3 boxes fasteners, $1.20	4 20	
	26.	1 large wallet, to order	3 75	
			——	51 45
		James J. Chapman:		
	26.	2 dozen sheets extra heavy blotting, $1	2 00	
		2 dozen sheets extra heavy white blotting $1	2 00	
		2 scrap-books, $2; 2 pen-holders, 70 cents	2 70	
		(For Solicitor of Treasury's office).		
			——	6 70
		Robert Beall:		
Dec.	2.	3 quarts Maynard & Noyes ink	1 50	
		½ dozen ivory paper-folders	3 75	
		2 bottles mucilage	1 00	
		2 dozen hexagon lead pencils, No. 2	1 50	
		2 quarts French ink	2 00	
		½ dozen steel erasers	3 00	
		2 dozen pen-holders	1 50	
	5.	1 penknife, $2.50; 1 ream Congress cap, $5	7 50	
		3 dozen lead pencils, No. 3	2 25	
		4 boxes pens	3 50	
	8.	½ ream legal cap	2 50	
		2 dozen hexagon pencils	1 50	
	12.	1 dozen pen-holders	75	
		2 balls twine	75	
		1 box steel pens	1 25	
	13.	1 dozen sheets oil board	1 00	
		6 bottles red ink	1 75	
	15.	½ ream manila wrapping	4 00	
		6 spools red tape	3 00	
	16.	5 quires Irish linen note	1 50	
		5 packages Irish linen envelopes	1 50	
		2 reams commercial note	6 00	
		1,000 white envelopes, No. 6	3 50	
		1 dozen pen-holders	75	
		1,000 McGill's fasteners, R. H., No. 2	4 00	
		1 box Spencerian pens, No. 2	1 25	
		1 dozen all blue pencils	1 00	
	17.	1 box Spencerian pens, $1	1 25	
	23.	1,000 white official envelopes	7 00	
		(For Solicitor Treasury's office.)	——	71 75
		M. E. Boardman:		
Dec.	26.	To 3 reams legal cap, $5		15 00
		James J. Chapman:		
	3.	1 shell knife, $1.75; 1 do., $150; 1 do., $2	5 25	
		1 dozen rolls pins	1 00	
	4.	2 reams packet note, headed and ruled, stop pattern, $5.25	10 50	
		1 M envelopes, to match	4 50	
	5.	2 dozen solid memorandums, $2	4 00	
		6 rulers, assorted, 75 cents	4 50	

1879.		James J. Chapman—Continued:		
Dec.	10.	1 box Congress quills	$1 25	
	12.	500 extra large manila envelopes	7 50	
	13.	1 inkstand tray, &c., to order	4 50	
	16.	1 inkstand tray, &c., to order	4 50	
	17.	3 dozen rubber holders, $4.50	13 50	
		1 dozen pencils	1 25	
	18.	1 pair leather-covered scissors	1 40	
	22.	12 letter-copying books, $1.50	18 00	
	23.	1 lap tablet	1 25	
	29.	1 M open-end jackets to order	15 00	
				$97 90
1880.		Robert Beall:		
Jan.	2.	1 box of paper	1 50	
	3.	1 gold pen and holder	5 00	
		¼ ream note paper	1 00	
		5 packages envelopes	1 00	
		1 great gross rubber bands, No. 11	1 75	
	6.	1 ream letter paper	5 00	
		500 No. 6 envelopes	2 00	
	7.	½ ream letter paper	2 50	
		100 envelopes	75	
		1 cut-glass inkstand	1 50	
		6 rubber pen-holders	1 75	
		1 knife	2 50	
		1 bottle mucilage	30	
		2 boxes steel pens	2 00	
		1 ream legal cap, 16 lbs	6 00	
		1 quart copying ink	1 00	
	16.	1 pair dividers	1 50	
	19.	1 box Gillott's pens, No. 294	1 00	
		1 box Gillott's pens, No. 353	1 00	
		1 box Perry's pens, No. 140	1 50	
	20.	2 quarts black ink, 50 cents	1 00	
		2 dozen hexagon pencils	1 50	
	24.	1 memorandum book	1 50	
		1 box paper	2 00	
		1 small bottle ink	25	
		(For Solicitor Treasury's office.)		46 80
		James J. Chapman:		
	7.	1 daily journal	1 75	
		1 diary	1 50	
	9.	6 quarts mucilage	4 50	
	10.	1 call-bell	1 75	
	12.	½ ream extra heavy manila	6 25	
	15.	½ ream envelope paper	2 75	
		24 boxes paper fasteners	8 40	
		2 gross pens, $3; 2 erasers, $1	4 00	
		1 knife eraser	75	
		6 bottles mucilage	60	
		6 mucilage stands	2 40	
	27.	3 binders for Congressional Record	3 00	
		3 binders for laws and resolutions	3 00	
		1,000 card envelopes, square	6 00	
	28.	2 gross pens	2 00	
	30.	1 M cards and printing from plate	15 00	
		12 solid memorandum, lettered to order	6 00	
	31.	1 large blotting pad	1 25	
		1 pair leather-covered scissors	1 40	
		1 M bristol-board cards	2 50	
				74 89
		W. H. & O. H. Morrison:		
		2 diaries, $1.60; 1 diary, 85 cents	2 45	
		1 penknife	75	
				3 20

1880.		M. E. Boardman:		
Jan.	7.	2 reams invoice paper	$10 00	
		1 M envelopes	9 00	
	10.	1 cabinet box cards and envelopes	25	
		1 dozen boxes No. 10 rubber bands, 20 cents	2 40	
		1½ dozen boxes No. 11 rubber bands	3 75	
		1 dozen boxes No. 13 rubber bands	3 50	
		1 dozen boxes No. 15 rubber bands	3 50	
		3 gross assorted rubber bands, ⅛-inch	3 00	
		1 gross assorted rubber bands, ¼-inch	1 25	
		½ gross assorted rubber bands, ⅜-inch	75	
		½ gross assorted rubber bands, ½-inch	1 00	
		½ gross assorted rubber bands, ⅝-inch	1 25	
				$39 65
1879.		James J. Chapman:		
Dec.	6.	1 gold pen	3 00	
		1 mucilage stand	50	
		3 brushes	25	
1880.				
Jan.	8.	2 M official envelopes	9 00	
		2 reams flat letter	5 00	
		Sponge	2 50	
			20 25	
		Less 1 gold pen	3 00	
		(For Solicitor Treasury's office.)		17 25
		James J. Chapman:		
Feb.	9.	1 hone, 60 cents; 2 boxes pens, $2.50	3 10	
		1 pen tray, $1; 12 quarts ink, $7.20	8 20	
		1 pair shears, 75 cents; 2 ink-stands, $1.50	2 25	
		1 pair shears, $1.40; 500 envelopes stamped, $9	10 40	
		275 cards stamped in blue, $4	4 00	
				27 95
		Fred. A. Fill:		
		5 dozen pens		60
1879.		W. H. & O. H. Morrison:		
July	24.	1 Law Review	1 25	
		1 each New Jersey Laws, vols. 38 and 39	10 00	
		1 Supreme Court, New York, vol. 19	2 75	
		1 Henning & Mumford, 4 volumes	32 00	
		1 Mumford Reports, 6 volumes	48 00	
		1 Iowa Reports, vol. 45	5 00	
		1 each South Carolina, vols. 11 and 12	13 00	
		1 South Carolina, vol. 13	7 50	
		1 South Carolina, vol. 14	5 50	
		1 New York Reports, vol. 68	1 75	
		1 Texas Reports, vol. 47	6 25	
		1 National Digest, vol. 8	5 50	
		1 North Carolina, vols. 77 and 78	9 00	
		1 Maryland Reports, vol. 46	5 00	
		1 Law Review, July, 1878, vol. 78	1 25	
		1 Law Review, April, 1878, vol. 78	1 25	
		1 Maryland Digest	8 00	
		1 Law Review, October	1 25	
		1 Massachusetts Reports, vol. 123	4 30	
		1 Law Review, July, 1877	1 25	
		1 New York Reports, vol. 69	1 75	
		1 Wisconsin, vol. 43	2 75	
		1 Grattan, vol. 29	6 00	
		1 Kentucky, vol. 13	5 00	
		1 Maryland, vol. 47	5 00	
		1 Law Review, October, 1878	1 25	
		1 Digest Court of Claims	5 00	
		1 Oregon Reports, vol. 6	5 25	
		1 Dillon, vol. 4	6 12	
		1 Bissell, vol. 7	6 12	
		1 New York, vol. 70	1 75	

1879.		W. H. & O. H. Morrison—Continued:		
July	24.	1 Ohio, vol. 30	$2 88	
		1 Ohio, vol. 31	2 87	
		1 Iowa, vol. 46	5 00	
		1 New Jersey Equity, vol. 29	5 00	
		1 Law Review, June, 1879	1 25	
		1 Massachusetts Reports, vol. 124	4 30	
		1 New York, vol. 71	1 75	
		1 Abbott Digest	6 40	
		1 Index Supreme Courts Reports	5 00	
		1 Benedict's District Court, vol. 8	7 50	
		1 Louisiana Reports, vol. 30, 2 parts	13 00	
		1 Law Review, April, 1879	1 25	
		1 New York Court of Appeals, vol. 72	1 75	
		1 Iowa Reports, vol 47	5 00	
		1 Waite's Actions, vol. 6	6 00	
		1 each Missouri Reports, vols. 60 to 64, inclusive	21 25	
		1 Michigan Reports, vols. 26 to 37, inclusive	39 00	
		1 New York Court of Appeals, vol. 73	1 75	
		1 each Missouri Reports, vols. 65, 66, 67	12 00	
		1 New Jersey Equity, vol. 30	3 50	
		1 Wisconsin, vol 45	3 00	
		(For Solicitor of the Treasury.)		$365 24
		Robert Beall:		
	1.	1 Froude's Cæsar	2 50	
		1 Railroad Guide, June	40	
		1 "Is Life Worth Living"	1 50	
		1 Bismarck and Franco War	1 50	
		(For Solicitor of the Treasury)		5 90
		American News Company:		
Aug.	7.	4 numbers "Around the World with General Grant" (for Solicitor of the Treasury)		2 00
		J. M. Judd:		
	13.	To 1 copy Encyclopedia of Law and Forms. Law edition		4 25
		Robert Beall:		
	30.	To 1 Tain's Literature, 3 vols	7 50	
		1 Bacon's Essays	2 50	
		(For Solicitor Treasury's office.)		10 00
		Robert Beall:		
Sep.	11.	To 1 Roman Literature (for Solicitor Treasury's office)		2 50
		American News Company:		
Oct.	1.	To 4 Numbers "Around the World with General Grant" (for Solicitor Treasury's office)		2 00
		American News Company:		
	1.	To 2 Numbers "Around the World with General Grant" (for Solicitor Treasury's office)		1 00
		American News Company:		
Nov.	1.	To 6 Nos. "Around the World with General Grant" (for Solicitor Treasury's Office)		3 00
		Robert Beall:		
		To 1 American Almanac (for Solicitor Treasury's office)		1 50
		W. H. & O. H. Morrison:		
July	9.	To 1 each North Carolina Reports, 77 and 80	9 00	
	9.	1 Massachusetts Reports, 125	4 30	
	26.	1 Starkie on Evidence	5 50	
	28.	1 set New York Supreme Court Reports, 6 volumes	21 00	
		1 set California Reports, volume 52	3 75	
Aug.	1.	1 United States Digest, volume 9	5 50	
	6.	1 Waite's Actions, volume 7	6 00	
	9.	1 Nevada Reports, volume 13	3 00	
Oct.	3.	1 Kentucky Reports, volume 14	5 00	
	8.	1 New York Reports, volume 74	1 50	
		(For Solicitor Treasury's office.)		64 55

1879.		American News Company:		
Nov.	17.	To Nos. 11 and 12 "Around the World with General.. Grant" (for Solicitor Treasury's office)		$1 00
		Robert Beall:		
Nov.	4.	To one Colton General Atlas	$20 00	
	15.	1 Express Almanac	25	
	13.	1 Smyth's Inheritance in the Great Pyramids	6 50	
	14.	Encyclopædia Britannica, volume 10, ½ morocco	10 00	
				36 75
		Total amount actually expended		11,441 46
		Balance of appropriation not expended		258 54
		Total amount of appropriation		11,700 00

EXHIBIT H.—*Report of the Librarian of the Department of Justice.*

DEPARTMENT OF JUSTICE,
October 28, 1880.

SIR: I have the honor herewith to submit my annual report of books and pamphlets received by this department for distribution since November 12, 1879:

Received December 29, from the Department of the Interior, 150 copies of the 9th volume of Otto's Supreme Court Reports; distributed, 113 copies; remaining, 137 copies.

Received December, 1879, from the Department of the Interior, 25 copies of the Official Register, volume 1; distributed, 21 copies; remaining, 4 copies.

Received January 8, 1880, from the Public Printer, 850 copies of the Annual Report of the Department of Justice, for 1879; distributed, 474 copies; remaining, 376 copies.

Received January 27, 1880, from the Court of Claims, 13 copies of the 14th volume of the Court of Claims; distributed, 8 copies; remaining, 5 copies.

Received March, 1880, from the Public Printer, 1,000 copies of the Decisions of the Supreme Court of the United States on election cases, in pamphlets; distributed, 680 copies; remaining, 320 copies.

Received March, 1880, from the Public Printer, 1,000 copies of No. 11, volume 8, of the Washington Law Reporter, Federal election cases; distributed, 789 copies; remaining, 211 copies.

Received July 7, 1880, from the Department of the Interior, 25 copies of the 2d volume Official Register; distributed, 17 copies; remaining, 8 copies.

Received August 2, 1880, from the Department of the Interior, 150 copies of the 10th volume of Otto's Supreme Court Reports; distributed, 115 copies; remaining, 35 copies.

Received October, 1880, from the Public Printer; 425 copies of the pamphlet laws, Forty-Sixth Congress, second session, 1879–'80; distributed, 411 copies; remaining, 14 copies.

Received October, 1880, from the Department of the Interior, 150 copies of the 11th volume of Otto's Supreme Court Reports; distributed, 113 copies; remaining, 37 copies.

This department also distributed since my last report, November 12, 1880, the following-named books and pamphlets:

Blue Book, 1 copy; Otto's Supreme Court Reports, volume 4, 1 copy;

volume 5, 1 copy; Revised Statutes, District of Columbia, 1 copy; United States Statutes, volume 18, 1 copy; volume 19, 1 copy; volume 20, 2 copies; Opinions Attorneys-General, volume 13, 2 copies; volume 14, 2 copies; Revised Statutes of the United States, second edition, 2 copies.

Very respectfully,

H. A. KLOPFER,
Librarian.

Hon. CHARLES DEVENS,
Attorney-General, Washington, D. C.

EXHIBIT J.—*Report of the Architect of the Capitol.*

ARCHITECT'S OFFICE, UNITED STATES CAPITOL,
Washington, D. C., October 19, 1880.

SIR: I have the honor to report that many repairs have been made to the court-house in this city during the past year.

The roof, which was much injured at the time of the recent fire, has been entirely repaired and painted. The defective roof-gutters of the western wing have been taken out, and new ones substituted.

The papering has been taken from the walls of the circuit court room and the rooms adjoining, and the walls, as well as the ceilings, have been painted. The criminal and equity court rooms have likewise been newly painted; and the furnaces put in order for the winter.

The fire which took place in this building in the month of March last was owing to a defective hot-air flue, which ran under and near a wooden partition in the circuit court room. The damage thus occasioned has been repaired.

Had the fire taken place at a later hour of the night, when assistance was not so readily at hand, in all probability the flames would have ascended the spaces of the partition and communicated with the roof, in which event the land records of the District, which are kept in the upper story, would either have been destroyed or dispersed.

This danger, which these valuable papers have so narrowly escaped, calls attention to the necessity of providing a more secure place for them, which at a small cost can be made in this building.

I again feel it my duty to bring to your notice the injury done to the exterior of this building by its use as a place for public out-of-door meetings.

Very respectfully, your obedient servant,

EDWARD CLARK,
Architect United States Capitol.

Hon. CHARLES DEVENS,
Attorney-General, Washington, D. C.

EXHIBIT K.—*Statement of expenditures made by the Department of Justice during the fiscal year ending June* 30, 1880, *out of the appropriation to defray the expenses of the courts of the United States for the fiscal year ending June* 30, 1878.

District.	Marshals.	Attorneys.	Clerks.	Commissioners.	Rents.	Miscellaneous.	Totals.
Alabama, northern district	$10,000 00			$245 85		$527 35	$10,773 20
Alabama, middle district	898 17			113 00			1,011 17
Alabama, southern district							
Arizona					$100 00		100 00
Arkansas, eastern district							
Arkansas, western district	2,585 34			10 05			2,595 39
California		$1,000 00					1,000 00
Colorado				12 85			12 85
Connecticut							
Dakota	1,371 91			501 95			1,873 86
Delaware							
District of Columbia		100 00				12 10	112 10
Florida, northern district				12 30			12 30
Florida, southern district							
Georgia, northern district	454 51			74 95			529 46
Georgia, southern district				37 45			37 45
Idaho							
Illinois, northern district		500 00					500 00
Illinois, southern district		40 00					40 00
Indiana		50 00					50 00
Iowa				41 35		87 50	128 85
Kansas				15 95			15 95
Kentucky			$297 66	237 30			534 96
Louisiana				7 40			7 40
Maine							
Maryland							
Massachusetts							
Michigan, eastern district	65 65						65 65
Michigan, western district				9 35			9 35
Minnesota	654 37						654 37
Mississippi, northern district	55 00			4 70			59 70
Mississippi, southern district	557 42						557 42
Missouri, eastern district	192 29			68 80			261 09
Missouri, western district							
Montana						966 00	966 00
Nebraska	101 71						101 71
Nevada							
New Hampshire							
New Jersey							
New Mexico	1,690 98						1,690 98
New York, northern district		44 30		59 30		477 64	581 24
New York, southern district							
New York, eastern district							
North Carolina, eastern district							
North Carolina, western district				317 40			317 40
Ohio, northern district							
Ohio, southern district	248 77						248 77
Oregon				10 10			10 10
Pennsylvania, eastern district							
Pennsylvania, western district				44 30		2,542 40	2,586 70
Rhode Island							
South Carolina	580 14						580 14
Tennessee, eastern district	2,000 00						2,000 00
Tennessee, middle district							
Tennessee, western district							
Texas, eastern district	1,103 38					32 10	1,135 48
Texas, western district				108 95			108 95
Utah	13 50					120 00	133 50
Vermont							
Virginia, eastern district							
Virginia, western district	22 44			69 00		12 10	103 54
Washington				8 35			8 35
West Virginia				31 55			31 55
Wisconsin, eastern district	15 91			557 30			573 21
Wisconsin, western district	21 57						21 57
Wyoming							
Total	22,633 06	1,534 30	297 66	2,599 50	100 00	4,777 19	32,141 71

EXHIBIT L.—*Statement of expenditures made by the Department of Justice during the fiscal year ending June* 30, 1880, *out of the appropriation to defray the expenses of the courts of the United States for the fiscal year ending June* 30, 1879.

District.	Marshals.	Attorneys.	Clerks.	Commissioners.	Rents.	Miscellaneous.	Totals.
Alabama, northern district		$404 35		$306 15		$93 88	$804 38
Alabama, middle district		300 00		1,268 80			1,568 80
Arizona		100 00		109 95		918 04	1,127 99
Arkansas, eastern district		950 00		61 75			1,011 75
Arkansas, western district		2,075 00		72 85			2,147 85
California		1,650 00					1,650 00
Colorado				69 35			69 35
Connecticut							
Dakota		355 00		100 55			455 55
Delaware		900 00					900 00
District of Columbia		1,182 24		108 90		133 08	1,424 22
Supreme Court							
Florida, northern district	$4,270 00	1,220 80	$357 95	60 85			5,909 60
Florida, southern district		342 20	25 00	14 90			382 10
Georgia, northern district		2,051 65		1,447 90			3,499 55
Georgia, southern district				247 35			247 35
Idaho		30 00	12 40				42 40
Illinois, northern district		6,325 00		383 40		48 00	6,756 40
Illinois, southern district		250 00					250 00
Indiana		300 00		73 67			373 67
Iowa		625 00		25 30			650 30
Kansas	1,000 00	511 20		300 60			1,811 80
Kentucky	4,761 00	3,085 00	69 35	98 70		9 00	8,023 05
Louisiana	2,764 11	1,403 18		364 95			4,532 24
Maine	585 14						585 14
Maryland		300 00		19 20		224 00	543 20
Massachusetts	1,734 44						1,734 44
Michigan, eastern district		625 00				220 78	845 78
Michigan, western district		384 40		112 30			496 70
Minnesota							
Mississippi, northern district				104 10			104 10
Mississippi, southern district		265 00					265 00
Missouri, eastern district	1,160 29	3,080 00		41 90		41 40	4,223 59
Missouri, western district		509 20		98 45			607 65
Montana	1,754 92						1,754 92
Nebraska		558 30					558 30
Nevada		624 40		32 90			657 30
New Hampshire		354 40		12 75			367 15
New Jersey		2,400 00		65 73			2,465 73
New Mexico			17 10				17 10
New York, northern district	5,988 19	833 46		108 60		1,609 30	8,539 55
New York, southern district		6,314 11				149 45	6,463 56
New York, eastern district		600 00					600 00
North Carolina, eastern district		375 00	303 36				678 36
North Carolina, western district		4,478 00		518 40		9 40	5,005 80
Ohio, northern district		375 00					375 00
Ohio, southern district		1,125 00		40 05			1,165 05
Oregon							
Pennsylvania, eastern district	1,000 00	625 00		831 25			2,456 25
Pennsylvania, western district		1,749 00	10 00	145 86		66 00	1,970 86
Rhode Island		431 00		14 40			445 40
South Carolina		74 40	127 05	1,176 25			1,377 70
Tennessee, eastern district	4,327 00	390 00		137 80			4,854 80
Tennessee, middle district		375 00		20 95			395 95
Tennessee, western district		2,238 00					2,238 00
Texas, eastern district		476 10	998 00	55 65			1,529 75
Texas, western district	2,500 00	770 20		244 50			3,514 70
Utah		1,065 00	125 00	6 20			1,196 20
Vermont	905 99	293 60					1,199 59
Virginia, eastern district			1,693 82	103 55			1,797 37
Virginia, western district	2,500 00	1,808 00	2,156 95				6,464 95
Washington		545 00		52 15			597 15
West Virginia	1,340 00	125 00		137 55			1,602 55
Wisconsin, eastern district				15 65			15 65
Wisconsin, western district		705 00					705 00
Wyoming		500 00		29 60			529 60
Total	36,591 08	59,432 19	5,895 98	9,241 66		3,522 33	114,683 24

EXHIBIT M.—*Statement of expenditures made by the Department of Justice out of the appropriations to defray the expenses of the courts of the United States during the fiscal year ending June* 30, 1880.

Districts.	Marshals.	Attorneys.	Clerks.	Jurors.	Witnesses.	Prisoners.	Commissioners.	Rents.	Miscellaneous.	Totals.
Alabama, northern district	$20,000 00	$3,572 00	$1,694 85	$6,400 00	$23,500 00	$1,150 00	$3,014 90	$750 00	$2,220 00	$62,301 75
Alabama, middle district	5,000 00	4,296 20	1,030 80	8,670 00	25,000 00	1,750 00	3,564 15	1,125 00	6,994 00	10,016 15
Alabama, southern district		1,598 40	800 80				96 90			49,910 10
Arizona	1,200 00	510 00	374 30	2,000 00	1,500 00	1,580 00	448 50	210 00	2,700 00	10,522 80
Arkansas, eastern district	2,500 00	2,172 00	959 95	4,240 00	5,500 00	1,400 00	368 85	900 00	4,014 00	22,054 80
Arkansas, western district	15,000 00	5,032 80	2,950 30	13,176 00	41,590 00	14,620 00	3,581 70	.....	11,360 05	107,310 85
California	5,500 00	9,220 00	6,586 82	7,320 00	8,800 00	6,701 50	1,839 20	8,500 00	7,078 00	61,545 53
Colorado	2,000 00	2,071 00	171 00	13,104 00	2,588 00	665 00	384 40	1,457 15	5,190 00	27,630 55
Connecticut	1,600 00	2,605 27	581 48	2,245 00	2,520 00	1,199 42	395 80	696 00	731 00	12,573 97
Dakota	15,000 00	4,491 00	2,662 25	12,751 00	23,600 00	6,150 00	800 55	1,532 00	11,025 00	78,011 80
Delaware	400 00	540 00	991 90	390 00	218 00	755 00	26 65	.....	1,830 00	5,151 55
District of Columbia	.....	12,460 32	.....	20,000 00	6,574 50	.....	115 83	.....	21,895 24	61,045 89
Supreme Court, United States	.....	.....	5,281 15	.....	.....	.....	.....	.....	27,000 00	32,281 15
United States jail	.....	.....	.....	.....	.....	67,500 00	.....	.....	.....	67,500 00
Florida, northern district	2,000 00	1,858 20	356 86	5,000 00	7,625 00	1,000 00	546 50	825 00	1,901 00	21,112 56
Florida, southern district	350 00	280 60	172 78	1,145 00	540 00	800 00	53 60	750 00	1,656 00	5,747 98
Georgia, northern district	13,000 00	5,484 30	4,222 90	5,716 00	19,783 00	3,720 00	3,832 00	1,600 00	3,221 00	60,579 20
Georgia, southern district			1,051 10	2,674 00	2,500 00	500 00	278 55	.....	400 00	7,403 65
Idaho	4,000 00	1,740 00	910 08	6,740 00	4,050 00	4,642 65	.....	.....	924 00	23,006 73
Illinois, northern district	5,000 00	4,865 30	.....	9,900 00	3,375 00	4,219 25	1,080 30	5,032 97	6,839 00	40,311 82
Illinois, southern district	8,000 00	4,053 40	790 00	16,030 00	14,500 00	3,200 00	499 70	.....	3,891 00	50,964 10
Indiana	4,800 00	2,337 93	.....	8,323 00	10,872 00	1,785 75	625 23	.....	3,581 00	32,324 91
Iowa	15,000 00	5,883 83	2,619 30	9,100 00	15,170 00	1,607 60	1,286 40	775 00	3,655 00	55,096 53
Kansas	2,600 00	4,746 02	803 05	4,362 00	12,738 00	2,353 50	1,446 00	150 00	2,755 00	31,953 57
Kentucky	12,000 00	2,793 20	1,588 05	9,190 00	12,050 00	5,400 00	1,100 80	450 00	3,626 00	48,198 05
Louisiana	6,000 00	5,623 60	.....	9,140 00	5,001 00	1,140 00	4,196 45	.....	4,336 33	35,437 38
Maine	2,000 00	1,141 00	472 96	2,091 00	3,296 90	2,269 47	775 05	.....	2,240 00	14,286 38
Maryland	2,700 00	3,510 00	1,439 85	5,789 00	2,900 00	2,858 52	1,596 05	.....	3,245 00	24,038 42
Massachusetts	3,500 00	7,412 72	2,358 13	8,911 00	8,126 00	2,792 00	2,035 65	.....	8,068 89	43,204 39
Michigan, eastern district	2,700 00	3,092 50	563 10	5,925 00	1,759 00	2,039 37	237 80	.....	2,460 00	18,776 77
Michigan, western district	1,400 00	3,527 50	1,148 01	6,640 00	2,050 00	300 00	420 00	525 00	2,421 70	18,442 21
Minnesota	5,000 00	3,975 82	1,116 85	6,005 00	6,900 00	1,670 25	1,699 25	.....	2,625 00	28,992 17
Mississippi, northern district	3,500 00	1,609 10	1,064 45	4,146 00	3,677 50	517 00	27 40	316 67	1,657 06	16,515 18
Mississippi, southern district	3,000 00	1,699 60	877 40	4,120 00	2,300 00	920 00	107 55	.....	2,365 00	15,389 55
Missouri, eastern district	270 00	7,846 20	2,214 01	8,928 00	10,602 00	2,931 76	586 10	.....	4,277 50	37,655 57
Missouri, western district	10,000 00	2,413 87	1,532 41	8,005 00	7,298 00	4,018 50	1,247 68	2,400 00	3,801 00	40,716 46
Montana	.....	1,220 28	1,357 29	2,708 00	3,000 00	5,800 00	48 20	430 00	2,258 00	16,821 77
Nebraska	7,000 00	2,682 41	1,410 40	5,648 00	7,313 00	1,310 75	671 60	.....	3,305 00	29,341 16
Nevada	3,000 00	1,302 60	.....	2,392 00	2,300 00	300 00	45 75	.....	783 00	10,123 35
New Hampshire	180 00	555 20	333 90	1,400 00	1,420 00	1,183 71	45 90	150 00	1,065 00	6,333 71
New Jersey	2,800 00	2,315 15	743 96	4,863 00	5,289 00	1,842 00	1,475 25	.....	2,946 00	22,274 36
New Mexico	2,400 00	1,360 00	814 65	4,908 00	2,736 00	1,700 00	51 85	.....	2,411 00	16,381 50
New York, northern district	15,500 00	8,555 00	1,760 50	4,495 00	34,888 33	2,487 18	7,254 90	387 50	4,512 00	79,840 41
New York, southern district	3,500 00	18,786 26	.....	11,500 00	3,854 00	2,546 00	3,188 90	.....	18,013 47	61,388 63

New York, eastern district	1,600 00	3,940 00	1,149 20	1,330 00	1,100 00	1,305 04	1,037 45	6,416 63	4,450 00	22,328 32
North Carolina, eastern district	3,900 00	2,800 00	1,964 29	5,250 00	9,199 00	1,070 00	1,824 25	1,187 50	1,358 00	28,553 04
North Carolina, western district	.....	5,269 00	5,422 60	6,791 00	29,000 00	3,600 00	3,425 90	50 00	4,141 00	57,699 50
Ohio, northern district	.....	3,777 80	2,669 93	8,410 00	3,652 00	1,520 00	683 75	900 00	3,437 00	25,050 48
Ohio, southern district	3,000 00	6,529 15	690 45	7,348 00	8,930 00	2,370 00	1,335 50	.....	4,564 20	34,767 30
Oregon	3,000 00	3,763 00	3,721 78	11,552 00	7,440 00	1,200 00	608 20	.....	4,909 00	36,193 98
Pennsylvania, eastern district	5,000 00	4,400 00	839 55	7,747 00	6,521 00	5,682 25	1,101 50	.....	3,779 00	35,070 30
Pennsylvania, western district	2,300 00	3,141 40	1,277 26	10,542 00	6,662 00	3,185 25	148 77	50 00	2,427 00	29,733 68
Rhode Island	300 00	668 15	319 40	900 00	400 00	786 08	88 15	.....	931 00	4,392 78
South Carolina	5,000 00	6,908 50	2,718 15	7,037 00	18,341 00	2,900 00	3,509 25	125 00	5,300 00	51,838 90
Tennessee, eastern district	8,000 00	6,459 30	3,840 86	2,441 85	14,152 15	3,500 00	2,709 30	.....	536 00	41,639 46
Tennessee, middle district	9,500 00	6,150 60	4,959 78	3,820 00	7,500 00	5,402 00	2,455 60	1,275 00	2,410 00	43,472 98
Tennessee, western district	600 00	3,091 90	807 65	3,386 00	1,608 00	1,407 00	159 45	1,293 75	2,209 00	14,562 75
Texas, eastern district	12,000 00	1,993 30	5,191 58	5,600 00	6,200 00	1,164 25	1,028 50	450 00	3,730 00	37,357 63
Texas, northern district	15,000 00	2,384 50	2,186 55	10,696 00	9,955 00	2,327 00	2,849 20	.....	6,993 00	52,391 25
Texas, western district	8,000 00	2,188 85	3,063 84	7,900 00	13,920 00	4,738 32	2,177 51	2,450 00	4,356 00	48,794 52
Utah	3,700 00	2,567 20	867 30	14,000 00	2,575 00	.....	18 90	450 00	4,955 00	29,133 40
Vermont	900 00	.....	156 85	1,120 00	780 00	500 00	41 95	.....	776 00	4,274 80
Virginia, eastern district	1,700 00	3,151 55	3,077 19	5,065 00	1,694 00	706 00	442 05	.....	4,917 00	20,752 79
Virginia, western district	10,000 00	4,822 40	3,171 95	5,480 90	21,213 00	2,462 70	4,728 35	675 00	4,435 40	56,989 70
Washington	1,600 00	1,787 80	1,218 81	2,050 00	1,959 00	3,910 00	101 70	.....	3,657 00	16,284 31
West Virginia	7,000 00	3,962 20	2,211 80	13,560 00	14,650 00	2,923 00	382 20	.....	2,563 00	47,252 20
Wisconsin, eastern district	1,900 00	3,205 12	1,253 78	5,249 00	1,654 00	847 07	64 90	.....	2,161 60	16,335 47
Wisconsin, western district	5,400 00	1,198 00	590 35	3,030 00	3,320 00	946 86	306 15	.....	1,805 00	16,596 36
Wyoming	2,500 00	824 00	1,302 15	960 00	2,155 00	4,763 00	220 00	600 00	1,920 00	15,244 15
Total	321,300 00	246,234 30	110,480 65	427,355 75	553,884 38	230,541 40	82,546 32	44,885 17	289,997 44	2,307,225 41

EXHIBIT N.—*Statement showing the number of assistants to the United States attorneys, their employment and compensation, from December* 1, 1879, *to December* 1, 1880.

Districts.	Regular assistants.	Compensation.	Remarks.
Alabama, northern district.	L. W. Day	$1,000 per annum	
Arkansas, western district.	George A. Grace	$1,200 per annum	
California	A. P. Van Duzer	$2,500 per annum	To July 1, 1880.
		$2,750 per annum	After July 1, 1880.
Do	W. E. Lovett	$1,000 per annum	To July 1, 1880.
		$1,250 per annum	After July 1, 1880.
Colorado	Charles H. Toll	$500 per annum	
Connecticut	N. R. Hart		No salary from government.
Georgia	S. A. Darnell	$1,200 per annum	To October 1, 1880.
		$1,500 per annum	After October 1, 1880.
Illinois, northern district	J. St. Clair Boal	$2,200 per annum	
Do	J. A. Baldwin	$1,000 per annum	
Illinois, southern district	E. T. Roe	do	
Indiana	C. L. Holstein	do	To February 1, 1880.
Do	L. H. Richardson	do	From March 1 to July 1, 1880.
		$1,500 per annum	After July 1, 1880.
Iowa	W. T. Rankin	$800 per annum	
Do	J. M. Ballou	$900 per annum	
Kansas	W. A. Johnston	$1,000 per annum	Resigned November 1, 1880.
Do	Thomas J. Humes	do	Appointed November 16, 1880.
Kentucky	W. A. Bullitt	do	
Louisiana	J. W. Gurley	$2,500 per annum	
Maryland	A. M. Rogers	$1,200 per annum	
Massachusetts	George P. Sanger, jr	$1,500 per annum	
Do	E. W. Burdett	$1,000 per annum	To July 1, 1880.
		$1,500 per annum	After July 1, 1880.
Do	Prentiss Cummings	$1,300 per annum	To July 1, 1880.
		$1,000 per annum	After July 1, 1880.
Michigan, eastern district	J. W. Finney	$2,000 per annum	
Michigan, western district	R. M. Montgomery	Fees	
Do	William D. Fuller	do	
Minnesota	Clement M. Green	Fees from district attorney's office	
Mississippi, southern district.	H. R. Ware	$1,000 per annum	
Missouri, eastern district	H. G. Dennison	$1,500 per annum	To July 1, 1880.
Do	C. G. B. Drummond	$1,700 per annum	Do.
		$2,000 per annum	After July 1, 1880.
Do	Elenious Smith	$1,000 per annum	Appointed July 15, 1880.
Missouri, western district	M. J. Leaming	do	Appointed January 3, 1880.
New Jersey	George M. Keasbey	$800 per annum	
New York, northern district	John C. Green	$1,700 per annum	To January 1, 1880.
		$2,000 per annum	After January 1, 1880.
Do	W. V. S. Woodward	$1,300 per annum	To January 1, 1880.
		$1,700 per annum	After January 1, 1880.
New York, southern district	S. Tenney	$1,200 per annum	To January 1, 1880.
		$1,400 per annum	To April 1, 1880.
		$1,500 per annum	After April 1, 1880.
Do	E. B. Hill	$1,200 per annum	To January 1, 1880.
		$1,400 per annum	To April 1, 1880.
		$1,500 per annum	After April 1, 1880.
Do	S. B. Clarke	$2,000 per annum	
Do	J. Dana Jones	$2,250 per annum	Resigned February 23, 1880.
Do	W. P. Fiero	$3,000 per annum	
Do	A. B. Herrick	do	
Do	F. H. Platt	$2,000 per annum	From February 1, 1880.
New York, eastern district	F. W. Angell	do	To July 1, 1880.
		$2,500 per annum	After July 1, 1880.
North Carolina, western district.	W. S. Ball	$1,200 per annum	To July 1, 1880.
		$1,700 per annum	After July 1, 1880.
Ohio, northern district	E. S. Meyer	$1,500 per annum	
Ohio, southern district	Richard Dyer	$2,000 per annum	
Do	Parker Dickson	$1,200 per annum	
Pennsylvania, eastern district.	Wood Gilpin	$1,500 per annum	
Do	H. P. Brown	$1,000 per annum	
Pennsylvania, western district.	J. S. Cook	do	To July 1, 1880.
Do	George C. Wilson	$1,500 per annum	Do.
		$2,500 per annum	After July 1, 1880.
South Carolina	E. W. M. Mackey	$2,000 per annum	
Do	W. R. Marshall	$100 per annum	
Tennessee, eastern district.	A. H. Pettibone	$1,200 per annum	To September 10, 1880.
Do	John P. Smith	do	After November 19, 1880.
Do	George Andrews	do	Temporarily.
Tennessee, middle district	George N. Tillman	$1,000 per annum	
Tennessee, western district.	J. B. Clough	$1,200 per annum	
Texas, eastern district	J. R. Burns	do	
Vermont	J. S. Peck	No salary	
West Virginia	George B. Caldwell	$500 per annum	

EXHIBIT N.—*Statement showing number of assistants to United States attorneys, &c.*—Cont'd.

Districts.	Regular assistants.	Compensation.	Remarks.
Arizona	Murat Masterson	Fees paid by district attorney.	
Do	Hugh Farley	Fees	
Dakota	J. R. Gamble	do	
Idaho	Alanson Smith	do	
Montana	A. S. Higgins	do	
Do	Cornelius Hedges	do	
Do	W. J. Kirkendall	Undetermined	Temporary, owing to district attorney's illness
Utah	J. W. Musgrave	$1,000 per annum	To September 1, 1880.
Do	J. H. Beatty	$2,000 per annum	
Do	Zerubbabel Snow	$500 per annum	After July 1, 1880.
Washington	C. H. Harford	Fees	Appointed October 1, 1880.

EXHIBIT N.—*Statement showing number of assistants to United States attorneys, &c.*—Cont'd.

Districts.	Special assistants.	Compensation.	Remarks.
Arkansas, eastern district	E. W. Kimball	Undetermined	Case J. T. Cox, jr.
California	Estee and Boalt	$10.30	Case *v.* Central Pacific Railroad Company.
Colorado	G. G. Symes	$1,000	Case *v.* Colorado Coal and Iron Company. Resigned.
Do	E. P. Jacobson	Undetermined	Do.
District of Columbia	R. B. Warden	$100	Case against Sawyer *et al.*
Do	H. H. Wells	Undetermined	Case Lieut. J. P. Walker.
Do	do		Estate R. Harrison.
Do	do	$150	Application of McBride for mandamus.
Do	do	$100	Case Leibschutz.
Do	do	$150	Carroll *v.* Smith.
Florida, northern district	Horatio Jenkins, jr	$250 per month	
Do	A. A. Knight	do	
Georgia, northern district	George S. Thomas	$200	State of Georgia *v.* A. W. Post and eleven deputy collectors.
Do	J. L. Hopkins	$500	
Do	J. S. Bigby	$300	
Do	S. A. Darnell	$250	
Do	Hillyer and Hill	$500	Case of Sims *v.* Ex United States marshal W. H. Smyth.
Iowa	G. J. Bingham	$140	Case *v.* J. A. Rhomberg.
Kansas	John Hutchings	$250 on account	Relative to claim of Black Bob band of Shawnee Indians to lands in Kansas.
Louisiana	John Ray	$62.50	Cases *v.* Hammond & Cary.
Do	H. A. Frisbie	$36	Whisky cases.
Do	John Ray	$18	Fees in criminal cases to August, 1880.
Do	T. C. W. Ellis	Undetermined	Cotton claim.
Massachusetts	Causten Browne	$657.75	Roberts *v.* Benton.
Minnesota	C. M. Greene	$75 per month	Resignation accepted October 4, 1880.
Michigan, eastern district	H. J. Beakes	$500	Services on conspiracy cases.
Missouri, eastern district	J. P. Ellis	$2,000	Bank cases, 1530 to 1536.
Do	J. Chandler	Undetermined	Do.
New York, southern district	George Bliss	$500	Silk fraud cases.
Do	Edwards Pierrepont	$2,000	Lewis's will case.
Do	do	$1,500	Tilden case.
Do	W. H. Arnoux	Undetermined	Do.
North Carolina, eastern district.	John A. Moore	do	October term circuit court.
Oregon	B. F. Dowell	$150	United States *v.* W. C. Griswold.
Pennsylvania, eastern district.	F. W. Hughes	Without compensation.	Case *v.* William Terry.
Do	G. E. Farquhar	do	Do.
Texas, western district	T. C. Sneed	$750	Mail-robbery cases.
Virginia, eastern district	B. W. Hoxsey	$30	Before grand jury at Alexandria.
Do	do	$45	Before grand jury at Richmond.
Do	do	$280	Under appointment October 7, 1878.

EXHIBIT N.—*Statement showing number of assistants to United States attorneys, &c.*—Cont'd.

Districts.	Special assistants.	Compensation.	Remarks.
Arizona	J. W. Van Slyck	Without compensation.	Services in second judicial district court.
Idaho	Albert Heed	$150	May 1, 1880.
Do	J. W. Poe	$140	Criminal cases in absence of district attorney.
Washington	J. A. Guyer	$150	Prosecuting crimes *v.* Umatilla Indians.
Wyoming	C. N. Potter	Undetermined	Case *v.* Frank Wolcott.

EXHIBIT O.—*Report of the Solicitor of the Treasury.*

DEPARTMENT OF JUSTICE,
OFFICE OF THE SOLICITOR OF THE TREASURY,
Washington, D. C., November 22, 1880.

SIR: I have the honor to transmit herewith seven tabular statements exhibiting the amount, character, and results of the litigation under my direction for the fiscal year ending June 30, 1880, shown by the docket entries of this office.

These tables embrace respectively—

1. Suits on transcripts of accounts of defaulting public officers, excepting those of the Post-Office Department, adjusted by the accounting officers of the Treasury Department.

2. Post-Office suits, embracing those against officers of the Post-Office Department, and cases of fines, penalties, and forfeitures for violation of the postal laws.

3. Suits on custom-house bonds.

4. Suits for the recovery of fines, penalties, and forfeitures under the customs-revenue and navigation laws.

5. Suits against collectors of customs and other officers or agents of the government for refund of duties and acts done in the line of their official duty.

6. Suits in which the United States is interested not embraced in the other classes.

7. A general summary or abstract of all the other tables.

An examination of the tables will show that the whole number of suits commenced within the year was 2,399, of which 69 were of class 1, for the recovery of $485,679.09; 140 were of class 2, for the recovery of $19,487.04; 109 were of class 3, for the recovery of $109,141.72; 202 were of class 4, for the recovery of $178,665.01; 586 were of class 5; 1,293 were of class 6, for the recovery of $773,335; making a total sued for as reported of $1,566,307.86.

Of the whole number of suits brought, 778 were decided in favor of the United States, 17 were adversely decided, 378 were settled and dismissed; in 19 penalties were remitted by the Secretary of the Treasury; leaving 1,207 still pending.

Of those pending at the commencement of the year, 477 were decided for the United States, 143 were decided adversely, 905 were settled and dismissed, and in 14 penalties were remitted by the Secretary of the Treasury.

The entire number of suits decided or otherwise disposed of during the year was 2,731, the whole amount for which judgments were obtained, exclusive of decrees in rem, was $845,842.15, and the entire amount collected from all sources was $448,871.41.

The number of cases wherein offers of compromise were received during the fiscal year ending June 30, 1880, was 254. The aggregate sum

claimed by the United States therein was $2,866,420.75. The number of offers accepted was 96. The aggregate sum claimed by the United States therein was $763,952.50. The amount offered and accepted in these cases was $160,570.27. The number of offers rejected was 103. The aggregate sum claimed by the United States in these was $1,203,286.58. The aggregate of offers so rejected was $125,987.34. The number of offers pending July 1, 1880, was 55. The aggregate claimed by the United States in these was $899,181.67. The sum of the offers so pending at the end of the fiscal year was $42,049.24.

Respectfully submitted.

K. RAYNER,
Solicitor of the Treasury.

Hon. CHARLES DEVENS,
Attorney-General.

No. 1.—*Report of suits on Treasury transcripts, other than Post-Office cases, instituted during the fiscal year ending June* 30, 1880, *in the several United States courts, and of proceedings had during said period in suits which were instituted prior thereto.*

Judicial district.	In suits brought during the fiscal year.								In suits brought prior to the fiscal year.					Whole number of suits disposed of.	Whole number of judgments in favor of the United States.	Total judgments.	Total collections.
	Number of suits.	Aggregate sued for.	Aggregate in judgment.	Collections.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Pending.	Judgments in old suits.	Collections in old suits.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.				
Alabama, northern district	1	$5,628 83	$5,628 83	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	1	$5,628 83	.....
Alabama, middle district	1	29,658 56	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alabama, southern district	....	.....	.....	.....	.....	.....	.....	....	$800 00	$1,047 10	1	.....	.....	1	1	800 00	$1,047 10
Arkansas, eastern district	....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas, western district	3	6,977 91	6,202 94	$6,205 07	2	.....	1	..	1,000 00	1,216 91	1	1	.....	5	3	7,202 94	7,421 98
California	4	5,481 92	.....	.....	.....	.....	.....	4	30,413 10	157 18	3	.....	1	4	3	30,413 10	157 18
Colorado	....	.....	.....	.....	.....	.....	.....	....	594 57	3,433 00	1	.....	.....	1	1	594 57	3,433 00
Connecticut	....	.....	.....	.....	.....	.....	.....	....	1,321 10	.....	1	.....	.....	1	1	1,321 10	.....
Delaware	....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Florida, northern district	....	.....	.....	.....	.....	.....	.....	....	302 76	356 52	.....	.....	.....	.....	.....	302 76	356 52
Florida, southern district	....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Georgia	....	.....	.....	.....	.....	.....	.....	....	.....	205 00	.....	.....	.....	.....	.....	.....	205 00
Illinois, northern district	2	54,320 00	31,850 00	.....	1	.....	.....	1	23,400 00	.....	1	.....	.....	2	2	55,250 00	.....
Illinois, southern district	2	61,096 08	.....	.....	.....	.....	.....	2	5,035 88	5,035 88	2	1	.....	3	2	5,035 88	5,035 88
Indiana	....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iowa	5	20,549 52	.....	465 27	.....	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	465 27
Kansas	2	3,124 68	229 00	.....	1	.....	.....	1	.....	2,000 00	.....	.....	.....	1	1	.....	2,000 00
Kentucky	3	6,344 37	.....	.....	.....	.....	.....	3	.....	11,368 15	.....	.....	.....	.....	.....	229 00	11,368 15
Louisiana	1	10,304 42	.....	.....	.....	.....	.....	1	.....	6,227 03	.....	1	.....	1	.....	.....	6,227 03
Maine	1	270 17	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland	1	88 38	.....	92 50	.....	.....	1	....	.....	86 71	.....	.....	.....	1	.....	.....	179 21
Massachusetts	....	.....	.....	.....	.....	.....	.....	....	.....	5,253 08	.....	.....	.....	.....	.....	.....	5,253 08
Michigan, eastern district	....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Michigan, western district	1	2,207 59	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Minnesota	....	.....	.....	.....	.....	.....	.....	....	10,264 78	6,840 50	2	.....	1	3	2	10,264 78	6,840 50
Mississippi, northern district	....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mississippi, southern district	2	6,286 45	6,286 45	.....	2	.....	.....	....	.....	.....	.....	.....	.....	2	2	6,286 45	.....
Missouri, eastern district	1	17,600 00	.....	.....	.....	.....	.....	1	10,435 98	.....	3	.....	.....	3	3	10,435 98	.....
Missouri, western district	1	31,800 00	.....	.....	.....	.....	.....	1	.....	4,000 00	.....	.....	.....	.....	.....	.....	4,000 00
Nebraska	1	2,846 80	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nevada	....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire	....	.....	.....	.....	.....	.....	.....	....	.....	1,000 00	.....	.....	2	2	.....	.....	1,000 00
New Jersey	....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....

New York, northern district																		
New York, southern district	4	34,605 57	5,798 39	5,219 15	2			2	4,244 45	9,933 59	2			4	4	10,042 84	15,152 74	
New York, eastern district	4	24,485 77					1	3	13,498 95	164 12	1		1	3	1	13,498 95	164 12	
North Carolina, eastern district									358 75		1			1	1	358 75		
North Carolina, western district	2	20,808 45						2										
Ohio, northern district										20,269 45							20,269 45	
Ohio, southern district	2	1,435 19						2										
Oregon	3	1,245 50		1,097 16			2	1		2,099 94				2			3,197 10	
Pennsylvania, eastern district	2	4,467 50						2	2,713 36		1	1		2	1	2,713 36		
Pennsylvania, western district										2,100 00			1	1			2,100 00	
Rhode Island																		
South Carolina	1	1,815 69						1										
Tennessee, eastern district	1	1,087 98		1,087 98				1									1,087 98	
Tennessee, middle district										7,825 79							7,825 79	
Tennessee, western district	1	51,768 43						1										
Texas, northern district	1	4,320 47		535 50				1									535 50	
Texas, eastern district	3	31,508 48						3	9,450 17	1,585 68	2		1	3	2	9,450 17	1,585 68	
Texas, western district	2	1,601 98						2										
Vermont	1	3,786 69						1										
Virginia, eastern district										495 08							495 08	
Virginia, western district																		
West Virginia																		
Wisconsin, eastern district																		
Wisconsin, western district																		
Arizona										2,367 52							2,367 52	
Dakota																		
Idaho										3,658 38							3,658 38	
Montana	2	1,296 47		201 58				2									201 58	
New Mexico	2	8,375 15		142 06			1	1						1			142 06	
Utah										1,810 30							1,810 30	
Washington																		
Wyoming																		
District of Columbia	6	28,484 09		372 03			1	5		283 09				1			655 12	
Total	69	485,679 09	55,995 61	15,418 30	9		7	53	113,833 85	100,820 00	22	4	7	49	31	169,829 46	116,238 30	

No. 2.—*Report of post-office suits instituted during the fiscal year ending June 30, 1880, in the several United States courts, and of proceedings had during said period in suits which were instituted prior thereto.*

Judicial districts.	In suits brought during the fiscal year.								In suits brought prior to the fiscal year.					Whole number of suits disposed of.	Whole number of judgments in favor of the United States.	Total judgments.	Total collections.
	Number of suits.	Aggregate sued for.	Aggregate in judgment.	Collections.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Pending.	Judgments in old suits.	Collections in old suits.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.				
Alabama, northern district	3	.....	$493 23	.....	3	.....	.....	....	$691 94	$691 94	2	.....	.....	5	5	$1,185 17	$691 94
Alabama, middle district	2	.....	700 00	.....	2	.....	.....	....	1,373 94	150 17	2	.....	.....	4	4	2,073 94	150 17
Alabama, southern district	1	.....	211 97	.....	1	.....	.....	....	101 20	.....	1	.....	.....	2	2	313 17	.....
Arkansas, eastern district	2	$415 98	640 94	.....	2	.....	.....	....	1,040 00	451 80	4	.....	.....	6	6	1,680 94	451 80
Arkansas, western district	1	473 32	.....	.....	.....	.....	.....	1	.....	1,100 00	.....	.....	.....	.....	.....	.....	1,100 00
California	5	2,020 89	100 00	.....	1	.....	.....	4	70,367 15	.....	6	.....	.....	7	7	70,467 15	.....
Colorado	1	.....	5 00	.....	1	.....	.....	....	.....	.....	.....	.....	.....	1	1	5 00	.....
Connecticut	5	.....	970 51	$970 51	5	.....	.....	....	.....	.....	.....	.....	.....	5	5	970 51	970 51
Delaware	....	.....	.....	.....	.....	.....	.....	....	.....	166 40	.....	.....	.....	.....	.....	.....	166 40
Florida, northern district	2	333 93	446 90	.....	1	.....	.....	1	1,158 14	.....	2	.....	.....	3	3	1,605 04	.....
Florida, southern district	....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Georgia	1	2,151 12	.....	.....	.....	.....	.....	1	368 60	61 38	1	.....	.....	1	1	368 60	61 38
Illinois, northern district	6	.....	2,356 80	2,157 58	6	.....	.....	....	44,670 14	2,927 63	2	.....	.....	8	8	47,026 94	5,085 21
Illinois, southern district	....	.....	.....	.....	.....	.....	.....	....	858 16	5,166 06	1	.....	.....	1	1	858 16	5,166 06
Indiana	2	512 72	123 36	640 56	1	.....	1	....	469 05	890 07	1	.....	.....	3	2	592 41	1,530 63
Iowa	1	103 76	.....	.....	.....	.....	.....	1	.....	1,160 00	.....	.....	.....	.....	.....	.....	1,160 00
Kansas	6	2,235 52	300 00	.....	2	.....	.....	4	.....	1,053 96	.....	.....	.....	2	2	300 00	1,053 96
Kentucky	2	.....	1,169 85	.....	2	.....	.....	....	187 25	41 93	2	.....	.....	4	4	1,357 10	41 93
Louisiana	4	855 17	411 00	1,021 53	1	.....	3	....	381 62	.....	1	.....	.....	5	2	792 62	1,021 53
Maine	4	.....	90 00	45 00	4	.....	.....	....	.....	200 00	.....	.....	1	5	4	90 00	245 00
Maryland	6	.....	540 12	330 12	6	.....	.....	....	178 29	.....	1	.....	.....	7	7	718 41	330 12
Massachusetts	5	.....	707 60	705 84	5	.....	.....	....	.....	.....	.....	.....	.....	5	5	707 60	705 84
Michigan, eastern district	1	348 53	.....	.....	.....	.....	.....	1	.....	81 97	.....	.....	1	1	.....	.....	81 97
Michigan, western district	....	.....	.....	.....	.....	.....	.....	....	.....	200 00	.....	.....	.....	.....	.....	.....	200 00
Minnesota	2	.....	481 00	300 00	2	.....	.....	....	.....	338 20	.....	.....	1	3	3	481 00	638 20
Mississippi, northern district	2	306 43	74 75	.....	1	.....	.....	1	.....	473 32	.....	.....	.....	1	1	74 75	473 32
Mississippi, southern district	2	729 73	474 55	349 25	1	.....	1	....	762 32	462 64	1	.....	.....	3	2	1,236 87	811 89
Missouri, eastern district	2	.....	55 00	.....	2	.....	.....	....	.....	.....	.....	.....	.....	2	2	55 00	.....
Missouri, western district	4	145 60	1,473 40	423 40	3	.....	.....	1	104 31	20 00	1	.....	.....	4	4	1,577 71	443 40
Nebraska	3	.....	347 00	115 00	3	.....	.....	....	.....	257 45	.....	.....	.....	3	3	347 00	372 45
Nevada	....	.....	.....	.....	.....	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire	1	202 49	.....	223 31	.....	.....	1	....	1,170 23	.....	1	.....	.....	2	1	1,170 23	523 31
New Jersey	1	.....	413 13	413 13	1	.....	.....	....	97 93	.....	1	.....	.....	2	2	511 06	413 18

New York, northern district	3		950 00	700 00	3								3	3	950 00	700 00	
New York, southern district	5	2,261 37	1,747 61	1,747 61	4			1		50 00			1	5	4	1,747 61	1,797 61
New York, eastern district																	
North Carolina, eastern district	1	191 64						1	174 32	174 32	1			1	1	174 32	174 32
North Carolina, western district																	
Ohio, northern district	4		83 75	59 15	4				10 00		1			5	5	93 75	59 15
Ohio, southern district	7		1,100 00		7				1,476 35	688 79	4			11	11	2,576 35	688 79
Oregon	3	565 66	10 00	575 66	1		2					1		4	1	10 00	575 66
Pennsylvania, eastern district	11	57 59	4,431 50	3,031 50	10			1	600 00	250 00	6			16	16	5,031 50	3,281 50
Pennsylvania, western district	1	153 71						1	1,429 62	429 62	2			2	2	1,429 62	429 62
Rhode Island																	
South Carolina	2	108 40	161 41	127 55	1			1	300 00	300 00	1			2	2	461 41	427 55
Tennessee, eastern district	3	48 47	380 37		3				483 66		2			5	5	864 03	
Tennessee, middle district	3	100 00	179 44		2			1						2	2	179 44	
Tennessee, western district	1		71 00	71 00	1									1	1	71 00	71 00
Texas, northern district	6	994 60	301 40	281 40	4			2	2,628 29		2			6	6	2,929 69	281 40
Texas, eastern district	1	291 47	342 89	342 89	1									1	1	342 89	342 89
Texas, western district	2	679 06	679 71		2					1,708 12			3	5	2	679 71	1,708 12
Vermont																	
Virginia, eastern district									350 00		2			2	2	350 00	
Virginia, western district	3	121 28	4,431 29		3				155 63	155 63	1			4	4	586 92	155 63
West Virginia																	
Wisconsin, eastern district	1		252 04	252 04	1									1	1	252 04	252 04
Wisconsin, western district	1		100 00		1									1	1	100 00	
Arizona																	
Dakota	3	2,452 95	434 40	439 32	2			1	3,505 96		4			6	6	3,940 36	439 32
Idaho																	
Montana																	
New Mexico	1	147 07						1									
Utah																	
Washington																	
Wyoming	1	478 58						1									
District of Columbia																	
Total	140	19,487 04	24,242 92	15,323 35	106		8	26	135,094 10	19,651 40	56	1	7	178	162	159,337 02	34,974 75

No. 3.—*Report of suits on custom-house bonds instituted during the fiscal year ending June* 30, 1880, *in the several United States courts, and of proceedings had during said period in suits which were instituted prior thereto.*

Judicial districts.	In suits brought during the fiscal year.								In suits brought prior to the fiscal year.					Whole number of suits disposed of.	Whole number of judgments for United States during the year.	Total judgments.	Total collections.
	Number of suits.	Aggregate sued for.	Aggregate in judgment.	Collections.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Pending.	Judgments in old suits.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Collections in old suits.				
California	1	$100 00	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Florida, southern district	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....
Illinois, northern district	1	10 08	.....	.....	.....	.....	.....	1	$129 31	1	.....	.....	$6 22	1	1	$129 31	$6 22
Iowa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	135 10	1	.....	.....	135 10
Louisiana	.....	.....	.....	.....	.....	.....	.....	.....	30, 405 76	8	87	80	618 21	175	8	30, 405 76	618 21
Maryland	1	24 48	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Massachusetts	2	2, 038 31	$70 01	$70 01	1	.....	.....	1	7, 875 47	5	.....	2	5, 681 54	8	6	7, 945 48	5, 751 55
Michigan, eastern district	25	32, 450 90	.....	.....	.....	.....	.....	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
Missouri, eastern district	2	241 76	248 71	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	2	2	248 71	.....
New Jersey	3	615 04	.....	.....	.....	.....	.....	3	.....	.....	.....	2	24 10	2	.....	.....	24 10
New York, northern district	2	900 00	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
New York, southern district	31	12, 434 51	8, 369 12	47 47	17	.....	2	12	11, 991 39	18	.....	111	3, 081 98	148	35	20, 360 51	3, 129 45
New York, eastern district	.....	.....	.....	.....	.....	.....	.....	.....	1, 334 68	1	.....	.....	.....	1	1	1, 334 68	.....
Pennsylvania, eastern district	41	60, 326 64	.....	12 52	.....	.....	1	40	591 14	1	.....	.....	.....	2	1	591 14	12 52
Total	109	109, 141 72	8, 687 84	130 00	20		3	86	52, 327 75	34	88	196	9, 547 15	341	54	61, 015 59	9, 677 15

No. 4.—*Report of suits for fines, penalties, and forfeitures under the customs-revenue laws, &c., instituted during the fiscal year ending June 30, 1880, in the several United States courts, and of proceedings had during said period in suits which were instituted prior thereto.*

Judicial district.	In suits brought during the fiscal year.									In suits brought prior to the fiscal year.						Whole number of suits disposed of.	Whole number of judgments in favor of the United States.	Total judgments.	Total collections.
	Number of suits.	Aggregate sued for.	Aggregate in judgment.	Collections.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Remitted.	Pending.	Judgments in old suits.	Collections in old suits.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Remitted.				
Alabama, northern district																			
Alabama, middle district																			
Alabama, southern district	4	$3,322 34				1			3		$6,500 00					1			$6,500 00
Arkansas, eastern district	1	500 00							1		171 58				1	1			171 58
Arkansas, western district																			
California	7		$200 00	$6,410 81	7						50 00		1	12		20	7	$200 00	6,460 81
Colorado																			
Connecticut																			
Delaware																			
Florida, northern district	1	570 00		570 00			1				30 00					1			600 00
Florida, southern district	5	1,022 00	100 00	1,028 54	3	1	1									5	3	100 00	1,028 54
Georgia																			
Illinois, northern district	4	20 00	20 00	65 50	1				3		50 00					1	1	20 00	115 50
Illinois, southern district	1	500 00							1										
Indiana																			
Iowa	1	25 00	25 00		1						51 05		2			3	1	25 00	51 05
Kansas																			
Kentucky																			
Louisiana	5	2,500 00		221 35	1	1	1		2				5	11		19	1		221 35
Maine	3			477 69	3						106 87		1	2		6	3		584 56
Maryland	34	2,327 80	220 00	226 60	2	1	18	4	9		20 00		1	3	1	30	2	220 00	246 60
Massachusetts	11	3,000 00	33 34	423 80	1			4	6	$350 00	516 55	5		1	1	12	6	383 34	940 35
Michigan, eastern district	15		3,450 00	1,950 00	11			1	3	100 00	100 00	1		1	3	17	12	3,550 00	2,050 00
Michigan, western district	3	250 00	50 00		2				1							2	2	50 00	
Minnesota																			
Mississippi, northern district																			
Mississippi, southern district											121 75			1	5	6			121 75
Missouri, eastern district	3	800 00						1	2							1			
Missouri, western district																			
Nebraska																			
Nevada																			
New Hampshire																			
New Jersey	3		300 00	386 60	3						329 60					3	3	300 00	716 20

No. 4.—*Report of suits for fines, penalties, and forfeitures under the customs-revenue laws, &c.*—Continued.

Judicial district.	In suits brought during the fiscal year.									In suits brought prior to the fiscal year.						Whole number of suits disposed of.	Whole number of judgments in favor of the United States.	Total judgments.	Total collections.
	Number of suits.	Aggregate sued for.	Aggregate in judgment.	Collections.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Remitted.	Pending.	Judgments in old suits.	Collections in old suits.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Remitted.				
New York, northern district	7	$500 00	$1,450 00	$1,450 00	5	.....	....	1	1	$200 00	$200 00	2	.....	....	....	8	7	$1,650 00	$1,650 00
New York, southern district	43	161,038 09	1 00	29,157 60	14	.....	8	3	18	78,181 95	6,484 92	8	3	11	1	48	22	78,182 95	35,642 52
New York, eastern district	3	1,500 00	.....	250 00	.....	1	2	....	....	1,000 00	350 00	1	1	7	....	12	1	1,000 00	600 00
North Carolina, eastern district	5	.....	.....	.....	.....	.....	5	....	....	.....	245 70	1	1	1	....	8	1	.....	245 70
North Carolina, western district	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	....	....	.....	.....
Ohio, northern district	1	89 78	89 78	.....	7	.....	....	....	....	.....	.....	.....	.....	....	....	1	1	89 78	.....
Ohio, southern district	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	....	....	.....	.....
Oregon	2	.....	.....	.....	.....	.....	1	....	1	.....	98 76	.....	1	....	2	4	.....	.....	98 76
Pennsylvania, eastern district	1	.....	.....	.....	.....	.....	....	....	1	1,173 66	468 79	2	5	....	....	7	2	1,173 66	468 79
Pennsylvania, western district	6	.....	100 00	327 45	1	.....	....	5	....	.....	300 00	.....	.....	2	....	8	1	100 00	627 45
Rhode Island	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	....	....	.....	.....
South Carolina	3	700 00	.....	48 80	.....	.....	1	....	2	.....	86 10	.....	.....	1	....	2	.....	.....	134 90
Tennessee, eastern district	....	.....	.....	.....	.....	.....	....	....	....	.....	25 00	.....	.....	1	...	1	.....	.....	25 00
Tennessee, middle district	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Tennessee, western district	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Texas, northern district	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Texas, eastern district	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Texas, western district	22	.....	503 00	949 95	19	.....	....	....	3	160 00	160 00	4	.....	....	....	23	23	663 00	1,109 95
Vermont	6	.....	208 00	2,593 00	4	.....	....	....	2	250 00	550 00	4	.....	....	....	8	8	458 00	3,143 00
Virginia, eastern district	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Virginia, western district	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
West Virginia	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Wisconsin, eastern district	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Wisconsin, western district	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Arizona	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Dakota	2	.....	175 00	125 00	2	.....	....	....	....	.....	50 00	.....	.....	....	....	2	2	175 00	175 00
Idaho	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Montana	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
New Mexico	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Utah	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Washington	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
Wyoming	....	.....	.....	.....	.....	.....	....	....	....	.....	.....	.....	.....	....	....	.....	.....	.....	.....
District of Columbia	....	.....	.....	.....	.....	.....	....	....	....	.....	25 00	.....	.....	....	....	.....	.....	.....	25 00
Total	202	178,665 01	6,925 12	46,662 69	81	5	38	19	59	81,415 61	17,091 67	28	21	54	14	260	109	88,340 73	63,754 36

No. 5.—*Report of suits against collectors of customs and other officers, instituted during the fiscal year ending June* 30, 1880, *in the several United States courts, and of proceedings had during said period in suits which were instituted prior thereto.*

Judicial districts.	In suits brought during the fiscal year.					In suits brought prior to the fiscal year.			Whole number of suits disposed of.	Whole number of judgments in favor of United States during the year.
	Number of suits.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Pending.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.		
California	2	.....	.....	.....	2	.....	.....	.....	.....	.....
Connecticut	.....	.....	.....	.....	.....	.....	1	.....	1	.....
Illinois, northern district	.....	.....	.....	.....	.....	.....	1	.....	1	.....
Louisiana	8	.....	.....	.....	8	.....	.....	.....	.....	.....
Maine	.....	.....	.....	.....	.....	.....	1	1	2	.....
Maryland	7	.....	.....	.....	7	3	.....	.....	3	3
Massachusetts	28	.....	.....	.....	28	4	.....	88	92	4
Michigan, eastern district	2	.....	.....	1	1	.....	.....	.....	1	.....
New York, southern district	496	.....	.....	71	425	3	4	298	376	3
Ohio, southern district	1	.....	.....	.....	1	.....	.....	.....	.....	.....
Oregon	7	.....	.....	.....	7	.....	1	.....	1	.....
Pennsylvania, eastern district	35	.....	3	.....	32	1	.....	1	5	1
Total	586	.....	3	72	511	11	8	388	482	11

No. 6.—*Report of miscellaneous suits instituted during the fiscal year ending June 30, 1880, in the several United States courts, and of proceedings had during said period in suits which were instituted prior thereto.*

Judicial districts.	In suits brought during the fiscal year.								In suits brought prior to the fiscal year.					Whole number of suits disposed of.	Whole number of judgments in favor of the United States.	Total judgments.	Total collections.
	Number of suits.	Aggregate sued for.	Aggregate in judgment.	Collections.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Pending.	Judgments in old suits.	Collections in old suits.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.				
Alabama, northern district	149	$80,672 50	$2,014 00	$5,030 38	21	.....	53	75	$3,250 00	$535 14	16	.....	14	104	37	$5,264 00	$5,565 52
Alabama, middle district	50	45,000 00	525 00	565 08	19	1	25	5	200 00	783 26	2	.....	....	47	21	725 00	1,348 34
Alabama, southern district	24	48,614 00	2,943 05	1,779 31	12	.....	3	9	2,259 50	421 89	6	.....	5	26	18	5,202 55	2,201 20
Arkansas, eastern district	15	4,345 10	4,675 50	2,971 49	15	.....	....	....	.....	569 89	.....	.....	....	15	15	4,675 50	3,541 38
Arkansas, western district	89	3,400 00	3,152 00	160 75	80	.....	3	6	1,575 00	655 47	7	.....	3	93	87	4,727 00	816 22
California	8	420 84	185 00	1,423 35	6	.....	....	2	.....	4,039 90	1	.....	14	21	7	185 00	5,463 25
Colorado	5	1,600 00	120 00	145 80	3	.....	....	2	.....	.....	.....	.....	....	3	3	120 00	145 80
Connecticut	6	3 27	506 27	625 71	6	.....	....	....	137 96	.....	1	.....	....	7	7	644 23	625 71
Delaware	.....	.....	.....	.....	.....	.....	....	....	1,307 95	1,307 95	1	.....	....	1	1	1,307 95	1,307 95
Florida, northern district	7	16,962 50	10 00	10 00	1	.....	....	6	1 00	200 00	2	.....	....	3	3	11 00	210 00
Florida, southern district	1	.....	5 00	14 25	1	.....	....	....	.....	268 71	.....	.....	2	3	1	5 00	282 96
Georgia	46	20,750 00	2,400 00	26 34	6	1	16	23	3,600 00	140 86	9	4	16	52	15	6,000 00	167 20
Illinois, northern district	14	17,136 25	7,382 80	1,593 08	9	.....	....	5	40,264 97	712 91	3	1	....	13	12	47,647 77	2,305 99
Illinois, southern district	3	.....	1,500 00	.....	3	.....	....	....	815 50	.....	2	.....	....	5	5	2,315 50	.....
Indiana	8	1,183 49	130 00	.....	7	.....	....	1	718 90	1,249 34	5	.....	1	13	12	848 90	1,249 34
Iowa	7	550 00	415 00	.....	6	.....	....	1	614 00	.....	2	.....	....	8	8	1,029 00	.....
Kansas	10	20,073 95	1,129 00	.....	8	.....	....	2	156 25	236 15	1	.....	....	9	9	1,285 25	236 15
Kentucky	11	578 60	376 00	100 00	7	.....	1	3	7,455 00	495 00	2	1	1	12	9	7,831 00	595 00
Louisiana	4	257 55	.....	.....	.....	.....	....	4	.....	.....	.....	3	1	4	.....	.....	.....
Maine	2	.....	201 00	403 59	2	.....	....	....	.....	.....	.....	.....	....	2	2	201 00	403 59
Maryland	7	610 00	86 60	50 00	6	.....	....	1	169 00	28 00	1	.....	....	7	7	255 60	78 00
Massachusetts	32	6,919 95	1,050 00	2,100 85	27	.....	....	5	4,016 24	4,088 22	18	.....	2	47	45	5,066 24	6,189 07
Michigan, eastern district	3	1,746 52	7,000 00	.....	1	.....	1	1	.....	.....	.....	.....	....	2	1	7,000 00	.....
Michigan, western district	9	527 71	994 00	100 00	7	.....	....	2	115 07	880 60	1	.....	....	8	8	1,109 07	980 60
Minnesota	23	12,477 30	1,698 50	780 95	13	.....	1	9	5,800 85	1,282 13	9	.....	....	23	22	7,499 35	2,063 08
Mississippi, northern district	4	.....	1,025 00	.....	2	.....	1	1	500 00	37 17	1	.....	2	6	3	1,525 00	37 17
Mississippi, southern district	6	6,300 00	1,100 00	250 00	3	1	....	2	.....	597 54	1	.....	3	8	4	1,100 00	847 54
Missouri, eastern district	13	.....	17 00	.....	13	.....	....	....	35,575 80	172 60	4	.....	1	18	17	35,592 80	172 60
Missouri, western district	3	300 00	5 00	5 00	1	.....	....	2	797 96	.....	1	.....	4	6	2	802 96	5 00
Nebraska	8	.....	160 00	112 00	8	.....	....	....	1 00	10,710 37	1	.....	....	9	9	161 00	10,822 37
Nevada	5	105,500 00	10 00	.....	1	.....	....	4	1,500 00	888 30	2	.....	1	4	3	1,510 00	888 30
New Hampshire	2	200 00	100 00	350 00	1	.....	1	....	525 00	60 50	2	.....	....	4	3	625 00	410 50

New Jersey	9	200 00	32,350 00	697 36	8	.....	1	....	200 00	13,295 78	1	.....	1	11	9	32,550 00	13,993 14
New York, northern district	5	2,250 00	300 00	.....	2	.....	....	3	50 00	1,325 35	1	1	1	5	3	350 00	1,325 35
New York, southern district	39	64,231 59	2,707 66	14,542 44	10	.....	15	14	3,197 52	67,181 95	5	2	50	82	15	5,905 18	81,724 39
New York, eastern district	10	2,093 26	851 00	600 00	5	.....	1	4	.....	1 00	.....	.....	....	6	5	851 00	601 00
North Carolina, eastern district	24	5,050 00	1,100 00	.....	3	.....	4	17	3,200 00	51 46	9	.....	17	33	12	4,300 00	51 46
North Carolina, western district	101	23,800 00	7,000 00	.....	34	.....	...	67	16,900 00	.....	84	.....	....	118	118	23,900 00	.....
Ohio, northern district	4	2,201 62	400 00	.....	2	.....	1	1	.....	3,272 95	.....	.....	....	3	2	400 00	3,272 95
Ohio, southern district	17	49,597 35	1,600 00	50 00	11	.....	....	6	387 60	659 02	2	.....	....	13	13	1,987 60	709 02
Oregon	48	11,396 00	4,423 00	3,043 53	44	1	3	....	35,228 00	.....	1	.....	....	49	45	39,651 00	3,043 53
Pennsylvania, eastern district	35	30,437 89	4,197 24	217 64	22	1	1	11	.....	.....	.....	4	....	28	22	4,197 24	217 64
Pennsylvania, western district	8	2,984 66	507 00	.....	4	.....	1	3	3,110 06	.....	4	.....	....	9	8	3,617 06	.....
Rhode Island	1	.....	1 00	.....	1	.....	....	....	.....	.....	.....	.....	....	1	1	1 00	.....
South Carolina	2	100 00	10 00	110 00	1	.....	1	....	.....	.....	.....	.....	....	2	1	10 00	110 00
Tennessee, eastern district	34	13,500 00	5,500 00	.....	7	.....	6	21	4,500 00	360 18	5	1	11	30	12	10,000 00	360 18
Tennessee, middle district	165	84,012 44	16,000 00	22 00	32	.....	64	69	10,474 07	40,419 66	13	.....	38	147	45	26,474 07	40,441 66
Tennessee, western district	19	8,220 00	2,110 00	27 35	6	.....	11	2	12,275 00	5,253 02	7	.....	1	25	13	14,385 00	5,280 37
Texas, northern district	4	650 00	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas, eastern district	11	1,525 00	1,697 50	17 00	5	.....	3	3	2,126 89	248 75	42	.....	23	73	47	3,824 39	265 75
Texas, western district	56	13,097 00	2,297 00	56 54	6	.....	20	30	19,450 00	.....	20	.....	17	63	26	21,747 00	56 54
Vermont	1	250 00	250 00	250 00	1	.....	....	....	.....	.....	.....	.....	....	1	1	250 00	250 00
Virginia, eastern district	1	.....	25 00	25 00	1	.....	....	....	50 00	50 00	4	.....	....	5	5	75 00	75 00
Virginia, western district	26	6,050 00	1,708 10	.....	6	.....	4	16	2,500 00	250 00	5	.....	7	22	11	4,208 10	250 00
West Virginia	.....	.....	.....	.....	.....	.....	.....	.....	.....	532 65	.....	.....	.....	.....	.....	.....	532 65
Wisconsin, eastern district	16	4,532 00	137 00	133 00	10	.....	1	5	1,349 48	2,021 75	5	.....	10	26	15	1,486 48	2,154 75
Wisconsin, western district	22	31,500 00	5,430 80	1,622 53	16	.....	1	5	2,097 00	3,807 11	1	.....	4	22	17	7,527 80	5,429 64
Arizona	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dakota	11	.....	1,421 44	579 95	10	.....	....	1	582 25	697 25	8	.....	....	18	18	2,003 69	1,277 20
Idaho	9	3,194 00	.....	.....	.....	.....	....	9	300 00	.....	5	.....	....	5	5	300 00	.....
Montana	11	8,053 00	.....	.....	1	4	3	3	.....	.....	.....	4	1	13	1	.....	.....
New Mexico	1	500 00	.....	.....	.....	.....	....	1	.....	.....	.....	.....	....	.....	.....	.....	.....
Utah	5	2,200 00	100 00	.....	1	.....	....	4	.....	.....	.....	.....	....	1	1	100 00	.....
Washington	21	.....	4,795 07	5,426 01	18	.....	3	...	150 00	171 55	2	.....	....	23	20	4,945 07	5,597 56
Wyoming	.....	.....	.....	.....	.....	.....	...	....	.....	120 60	.....	.....	1	1	.....	.....	120 60
District of Columbia	3	5,579 66	.....	3,169 92	.....	.....	1	2	.....	4,956 72	1	.....	1	3	1	.....	8,126 64
Total	1,293	773,335 00	137,834 53	49,188 20	562	9	250	472	229,484 82	175,038 65	326	21	253	1,421	888	367,319 35	224,226 85

No. 7.—*Statistical summary of business arising from suits, &c., in which the United States is a party or has an interest, under charge of the Solicitor of the Treasury, during the fiscal year ending June* 30, 1880.

Judicial districts.	In suits brought during the fiscal year ending June 30, 1880.													
	Suits on Treasury transcripts.		Post-office suits.		Suits on custom-house bonds.		Suits for fines, penalties, and forfeitures under the customs-revenue laws, &c.		Suits against collectors of customs and agents or officers of the United States.	Miscellaneous suits.		Total amount reported sued for.	Total amount reported in judgment in favor of the United States.	Total amount reported collected.
	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.	No.	No.	Amount.			
Alabama, northern district	1	$5,628 83	3	.....	....	.....	....	.....	.....	149	$80,672 50	$86,301 33	$8,136 06	$5,030 38
Alabama, middle district	1	29,658 56	2	.....	....	.....	....	.....	.....	50	45,000 00	74,658 56	1,225 00	565 08
Alabama, southern district	....	.....	1	.....	....	.....	4	$3,322 34	.....	24	48,614 00	51,936 34	3,155 02	1,779 31
Arkansas, eastern district	....	.....	2	$415 98	....	.....	1	500 00	.....	15	4,345 10	5,261 08	5,316 44	2,971 49
Arkansas, western district	3	6,977 91	1	473 32	....	.....	....	.....	.....	89	3,400 00	10,851 23	9,354 94	6,365 82
California	4	5,481 92	5	2,020 89	1	$100 00	7	.....	2	8	420 84	8,023 65	485 00	7,834 16
Colorado	....	.....	1	.....	....	.....	....	.....	.....	5	1,600 00	1,600 00	125 00	145 80
Connecticut	....	.....	5	.....	....	.....	....	.....	.....	6	3 27	3 27	1,476 78	1,596 22
Delaware	....	.....	....	.....	....	.....	....	.....	.....	.....	.....	.....	.....	.....
Florida, northern district	....	.....	2	333 93	....	.....	1	570 00	.....	7	16,962 50	17,866 43	456 90	580 00
Florida, southern district	....	.....	....	.....	....	.....	5	1,022 00	.....	1	.....	1,022 00	105 00	1,042 79
Georgia	....	.....	1	2,151 12	....	.....	....	.....	.....	46	20,750 00	22,901 12	2,400 00	26 34
Illinois, northern district	2	54,320 00	6	.....	1	10 08	4	20 00	.....	14	17,136 25	71,486 33	41,609 60	3,816 16
Illinois, southern district	2	61,096 08	....	.....	....	.....	1	500 00	.....	3	.....	61,596 08	1,500 00	.....
Indiana	....	.....	2	512 72	....	.....	....	.....	.....	8	1,183 49	1,696 21	253 36	640 56
Iowa	5	20,549 52	1	103 76	....	.....	1	25 00	.....	7	550 00	21,228 28	440 00	465 27
Kansas	2	3,124 68	6	2,235 52	....	.....	....	.....	.....	10	20,073 95	25,434 15	1,658 00	.....
Kentucky	3	6,344 37	2	.....	....	.....	....	.....	.....	11	578 60	6,922 97	1,545 85	100 00
Louisiana	1	10,304 42	4	855 17	....	.....	5	2,500 00	8	4	257 55	13,917 14	411 00	1,242 88
Maine	1	270 17	4	.....	....	.....	3	.....	.....	2	.....	270 17	291 00	926 28
Maryland	1	88 38	6	.....	1	24 48	34	2,327 80	7	7	610 00	3,050 66	846 72	699 22
Massachusetts	....	.....	5	.....	2	2,038 31	11	3,000 00	28	32	6,919 95	11,958 26	1,860 95	3,300 50
Michigan, eastern district	....	.....	1	348 53	25	32,450 90	15	.....	2	3	1,746 52	34,545 95	10,450 00	1,950 00
Michigan, western district	1	2,207 59	....	.....	....	.....	8	250 00	.....	9	527 71	2,985 30	1,044 00	100 00
Minnesota	....	.....	2	.....	....	.....	....	.....	.....	23	12,477 30	12,477 30	2,179 50	1,080 95

Mississippi, northern district			2	306 43						4		306 43	1,099 75	
Mississippi, southern district	2	6,286 45	2	729 73						6	6,300 00	13,316 18	7,861 00	599 25
Missouri, eastern district	1	17,600 00	2		2	241 76	3	800 00		13		18,641 76	320 71	
Missouri, western district	1	31,800 00	4	145 60						3	300 00	32,245 60	1,478 40	428 40
Nebraska	1	2,846 80	3							8		2,846 80	507 00	227 00
Nevada										5	105,500 00	105,500 00	10 00	
New Hampshire			1	202 49						2	200 00	402 49	100 00	573 31
New Jersey			1		3	615 64	3			9	200 00	815 04	33,063 13	1,497 09
New York, northern district			3		2	900 00	7	500 00		5	2,250 00	3,650 00	2,700 00	2,150 00
New York, southern district	4	34,605 57	5	2,261 37	31	12,434 51	43	161,038 09	496	39	64,231 59	274,571 13	18,623 78	50,714 27
New York, eastern district	4	24,485 77					3	1,500 00		10	2,093 26	28,079 03	851 00	850 00
North Carolina, eastern district			1	191 64			5			24	5,050 00	5,241 64	1,100 00	
North Carolina, western district	2	20,808 45								101	23,800 00	44,608 45	7,000 00	
Ohio, northern district			4				1	89 78		4	2,201 62	2,291 40	573 53	59 15
Ohio, southern district	2	1,435 19	7						1	17	49,597 35	51,032 54	2,700 00	50 00
Oregon	3	1,245 50	3	565 66			2		7	48	11,396 00	13,207 16	4,433 00	4,716 35
Pennsylvania, eastern district	2	4,467 50	11	57 59	41	60,326 64	1		35	35	30,437 89	95,289 62	8,628 74	3,261 66
Pennsylvania, western district			1	153 71			6			8	2,984 66	3,138 37	607 00	327 45
Rhode Island										1			1 00	
South Carolina	1	1,815 69	2	108 40			3	700 00		2	100 00	2,724 09	171 41	286 35
Tennessee, eastern district	1	1,087 98	3	48 47						34	13,500 00	14,636 45	5,880 37	1,087 98
Tennessee, middle district			3	100 00						165	84,012 44	84,112 44	16,179 44	22 00
Tennessee, western district	1	51,768 43	1							19	8,220 00	59,988 43	2,181 00	98 35
Texas, northern district	1	4,320 47	6	994 60						4	650 00	5,965 07	301 40	816 90
Texas, eastern district	3	31,508 48	1	291 47						11	1,525 00	33,324 95	2,040 39	359 89
Texas, western district	2	1,601 98	2	679 06			22			56	13,097 00	15,378 04	3,479 71	1,006 49
Vermont	1	3,786 69					6			1	250 00	4,036 69	458 00	2,843 00
Virginia, eastern district										1			25 00	25 00
Virginia, western district			3	121 28						26	6,050 00	6,171 28	2,139 39	
West Virginia														
Wisconsin, eastern district			1							16	4,532 00	4,532 00	389 04	385 04
Wisconsin, western district			1							22	31,500 00	31,500 00	5,530 80	1,622 53
Arizona														
Dakota			3	2,452 95			2			11		2,452 95	2,030 84	1,144 27
Idaho										9	3,194 00	3,194 00		
Montana	2	1,296 47								11	8,053 00	9,349 47		201 58
New Mexico	2	8,375 15	1	147 07						1	500 00	9,022 22		142 06
Utah										5	2,200 00	2,200 00	100 00	
Washington										21			4,795 07	5,426 01
Wyoming			1	478 58								478 58		
District of Columbia	6	28,484 09								3	5,579 66	34,063 75		3,541 95
Total	69	485,679 09	140	19,487 04	109	109,141 72	202	178,665 01	586	1,293	773,335 00	1,566,307 86	233,686 02	126,722 54

No. 7—*Statistical summary of business arising from suits, &c., in which the United States is a party or has an interest, &c.*—Continued.

Judicial districts.	In suits brought during the fiscal year ending June 30, 1880.						In suits commenced prior thereto.						Total number of judgments rendered in favor of the United States this year.	Total number of suits disposed of.	Whole amount of judgments rendered in favor of the United States during the fiscal year ending June 30, 1880.	Whole amount of collections from all sources during the fiscal year ending June 30, 1880.
	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Remitted.	Pending.	Total number of suits commenced.	Amount of judgments reported in all old suits this year.	Amount reported collected in all old suits this year.	Decided for the United States.	Decided against the United States.	Settled, dismissed, &c.	Remitted.				
Alabama, northern district	25	.....	53	....	75	153	$3,941 94	$1,227 08	18	.....	14	....	43	110	$12,078 00	$6,257 46
Alabama, middle district	21	1	25	....	6	53	1,573 94	933 43	4	.....	.....	....	25	51	2,798 94	1,498 51
Alabama, southern district	13	1	3	....	12	29	3,160 70	7,968 99	8	.....	5	....	21	30	6,315 72	9,748 30
Arkansas, eastern district	17	.....	.....	....	1	18	1,040 00	1,193 27	4	.....	.....	1	21	22	6,356 44	4,164 76
Arkansas, western district	82	.....	4	....	7	93	2,575 00	2,972 38	8	1	3	....	90	98	11,929 94	9,338 20
California	14	.....	.....	....	13	27	100,780 25	4,247 08	10	1	27	....	24	52	101,265 25	12,081 24
Colorado	4	.....	.....	....	2	6	594 57	3,433 00	1	.....	.....	....	5	5	719 57	3,578 80
Connecticut	11	.....	1	....	.....	11	1,459 06	.....	2	1	.....	....	13	14	2 935 84	1,596 22
Delaware	.....	.....	.....	....	.....	.....	1,307 95	1,474 35	1	.....	.....	....	1	1	1,307 95	1,474 35
Florida, northern district	2	.....	1	....	7	10	1,461 90	586 52	4	.....	.....	....	6	7	1,918 80	1,166 52
Florida, southern district	4	1	1	....	.....	6	.....	268 71	.....	1	2	....	4	9	105 00	1,311 50
Georgia	6	1	16	....	24	47	3,968 60	407 24	10	4	16	....	16	53	6,368 60	433 58
Illinois, northern district	17	.....	.....	....	10	27	108,464 42	3,696 76	7	2	.....	....	24	26	150,074 02	7,512 92
Illinois, southern district	3	.....	.....	....	3	6	6,709 54	10,201 94	5	1	.....	....	8	9	8,209 54	10,201 94
Indiana	8	.....	1	....	1	10	1,187 95	2,139 41	6	.....	1	....	14	16	1,441 31	2,779 97
Iowa	7	.....	.....	....	7	14	614 00	1,346 15	2	2	1	....	9	12	1,054 00	1,811 42
Kansas	11	.....	.....	....	7	18	156 25	3,290 11	1	.....	.....	...	12	12	1,814 25	3,290 11
Kentucky	9	.....	1	....	6	16	7,642 25	11,905 08	4	1	1	....	13	16	9,188 10	12,005 08
Louisiana	2	1	4	....	15	22	30,787 38	6,845 24	9	96	92	....	11	204	31,198 38	8,088 12
Maine	9	.....	.....	....	1	10	.....	306 87	.....	2	4	....	9	15	291 00	1,233 15
Maryland	14	1	19	4	18	56	347 29	134 71	5	1	3	1	19	48	1,194 01	833 93
Massachusetts	34	.....	.....	4	40	78	12,241 71	15,539 39	32	.....	93	1	66	164	14,102 66	18,839 89
Michigan, eastern district	12	.....	2	1	31	46	100 00	181 97	1	.....	2	3	13	21	10,550 00	2,131 97
Michigan, western district	9	.....	.....	....	4	13	115 07	1,080 60	1	.....	.....	....	10	10	1,159 07	1,180 60
Minnesota	15	.....	1	....	9	25	16,065 63	8,460 83	11	.....	2	....	26	29	18,245 13	9,541 78
Mississippi, northern district	3	.....	1	....	2	6	500 00	510 49	1	.....	2	....	4	7	1,599 75	510 49

Mississippi, southern district	6	1	1	....	2	10	762 32	1,181 93	2	.....	4	5	8	18	8,623 32	1,781 18
Missouri, eastern district	17	.....	.....	1	3	21	46,011 78	172 60	7	.....	1	....	24	26	46,332 49	172 60
Missouri, western district	4	.....	.....	....	4	8	902 27	4,020 00	2	.....	4	....	6	10	2,380 67	4,448 40
Nebraska	11	.....	.....	....	1	12	1 00	10,967 82	1	.....	.....	....	12	12	508 00	11,194 82
Nevada	1	.....	.....	....	4	5	1,500 00	888 30	2	.....	1	....	3	4	1,510 00	888 30
New Hampshire	1	.....	2	....	.....	3	1,695 23	1,060 50	3	.....	2	....	4	8	1,795 23	1,633 81
New Jersey	12	.....	1	....	3	16	297 93	13,649 48	2	.....	3	....	14	18	33,361 06	15,146 57
New York, northern district	10	.....	.....	1	6	17	250 00	1,525 35	3	1	1	....	13	16	2,950 00	3,675 35
New York, southern district	47	.....	96	3	472	618	97,615 31	86,732 44	36	9	471	1	83	663	116,239 09	137,446 71
New York, eastern district	5	1	4	....	7	87	15,833 63	515 12	3	1	8	....	8	22	16,684 63	1,365 12
North Carolina, eastern district	3	.....	9	....	18	30	3,733 07	471 48	12	1	18	....	15	43	4,833 07	471 48
North Carolina, western district	34	.....	.....	....	69	103	16,900 00	.....	84	.....	.....	....	118	118	23,900 00	.....
Ohio, northern district	7	.....	1	....	1	9	10 00	23,542 40	1	.....	.....	....	8	9	583 53	23,601 55
Ohio, southern district	18	.....	.....	....	9	27	1,863 95	1,347 81	6	.....	.....	....	24	24	4,563 95	1,397 81
Oregon	45	1	8	....	9	63	35,228 00	2,198 70	1	3	.....	2	46	60	39,661 00	6,915 05
Pennsylvania, eastern district	32	4	2	....	87	125	5,078 16	718 79	11	10	1	....	43	60	13,706 90	3,980 45
Pennsylvania, western district	5	.....	1	5	4	15	4,339 68	2,829 62	6	.....	3	....	11	20	5,146 68	3,157 07
Rhode Island	1	.....	.....	....	.....	1	.....	.....	.....	.....	.....	....	1	1	1 00	.....
South Carolina	2	.....	2	....	4	8	300 00	386 10	1	.....	1	....	3	6	471 41	672 45
Tennessee, eastern district	10	.....	6	....	22	38	4,983 66	385 18	7	1	12	....	17	36	10,864 03	1,473 16
Tennessee, middle district	34	.....	64	....	70	168	10,474 07	48,245 45	13	.....	38	....	47	149	26,653 51	48,267 45
Tennessee, western district	7	.....	11	....	3	21	12,275 00	5,253 02	7	.....	1	....	14	26	14,456 00	5,351 37
Texas, northern district	4	.....	.....	....	7	11	2,628 29	.....	2	.....	.....	....	6	6	2,929 69	816 90
Texas, eastern district	6	.....	3	....	6	15	11,577 06	1,834 43	44	.....	24	....	50	77	13,617 45	2,194 32
Texas, western district	27	.....	20	....	35	82	19,610 00	1,868 12	24	.....	20	....	51	91	23,089 71	2,874 61
Vermont	5	.....	.....	....	3	8	250 00	550 00	4	.....	.....	....	9	9	708 00	3,393 00
Virginia, eastern district	1	.....	.....	....	.....	1	400 00	545 08	6	.....	.....	....	7	7	425 00	570 08
Virginia, western district	9	.....	4	....	16	29	2,655 63	405 63	6	.....	7	....	15	26	4,795 02	405 63
West Virginia	.....	.....	.....	....	.....	.....	.....	532 65	.....	.....	.....	....	.....	.....	.....	532 65
Wisconsin, eastern district	11	.....	1	....	5	17	1,349 48	2,021 75	5	.....	10	....	16	27	1,738 52	2,406 79
Wisconsin, western district	17	.....	1	....	5	23	2,097 00	3,807 11	1	.....	4	....	18	23	7,627 80	5,429 64
Arizona	.....	.....	.....	....	.....	.....	.....	2,367 52	.....	.....	.....	....	.....	.....	.....	2,367 52
Dakota	14	.....	.....	....	2	16	4,088 21	747 25	12	.....	.....	....	26	26	6,119 05	1,891 52
Idaho	.....	.....	.....	....	9	9	300 00	3,658 38	5	.....	.....	....	5	5	300 00	3,658 38
Montana	1	4	3	....	5	13	.....	.....	.....	4	1	....	1	13	.....	201 58
New Mexico	.....	.....	1	....	3	4	.....	.....	.....	.....	.....	....	.....	1	.....	142 06
Utah	1	.....	.....	....	4	5	.....	1,810 30	.....	.....	.....	....	1	1	100 00	1,810 30
Washington	18	.....	3	....	.....	21	150 00	171 55	2	.....	.....	....	20	23	4,945 07	5,597 56
Wyoming	.....	.....	.....	....	1	1	.....	120 60	.....	.....	1	....	.....	1	.....	120 60
District of Columbia	.....	.....	2	....	7	9	.....	5,264 81	1	.....	1	....	1	4	.....	8,806 76
Total	778	17	378	19	1,207	2,399	612,156 13	322,148 87	477	143	905	14	1,255	2,731	845,842 15	448,871 41

Statement showing the number of suits in which the United States was a party or had an interest, commenced in each year from the establishment of the office of the Solicitor of the Treasury to June 30, 1880; also, the aggregate amounts claimed in said suits and the number decided or otherwise disposed of, together with the aggregate sums collected in each of said years.

Years.	Number of suits commenced.	Amount claimed.	Amount collected.	Number of suits decided for the United States.	Number of suits decided against the United States.	Number of suits settled and otherwise disposed of.
1830	403			215	11	56
1831	465			253	28	43
1832	615			370	51	36
1833	457			276	13	63
1834	447			225	7	85
1835	282			214	7	28
1836	430			182	18	27
1837	4,570			550	11	61
1838	1,089			586	12	44
1839	1,319	$25,494,359 00	$6 210,720 93	561	75	171
1840	804			524	50	105
1841	418			237	62	135
1842	614			313	35	106
1843	387			186	53	68
1844	421			137	40	149
1845	447			126	85	106
1846	364			83	19	78
1847	250			119	9	57
1848	155			64	34	122
1849	102	277,310 26	4,766 24	11	1	23
1850	91	229,583 59	29,987 30	17	15	19
1851	352	131,379 87	48,002 52	12	13	89
1852	437	290,281 18	14,345 97	7	1	5
1853	84	211,193 16	28,112 41	4	3	2
1854	586	667,560 56	351,235 59	142	145	48
1855	918	705,745 68	436,722 17	298	92	386
1856	747	1,271,040 35	517,404 64	207	99	272
1857	520	1,130,979 78	748,532 07	200	89	337
1858	726	2,054,092 11	398,064 09	199	69	158
1859	744	916,492 84	1,246,805 71	271	54	211
1860	760	751,704 86	434,201 32	213	101	163
1861	529	44,279 16	343,346 46	178	28	118
1862	1,072	1,463,229 55	461,438 87	384	105	203
1863	2,051	1,066,939 05	*a*2,997,709 45	694	258	454
1864	2,604	856,644 34	*b*7,985,532 91	1,004	26	156
1865	2,348	2,199,527 35	*c*9,558,621 42	012	18	127
1866	4,672	*e*8,066,629 65	*d*4,577,363 76	1,807	59	1,435
1867	3,873	*f*13,582,619 22	2,620,696 69	2,193	265	702
1868	2,004	10,970,147 59	644,517 42	547	88	450
1869	2,169	10,087,346 98	719,795 24	533	76	722
1870	1,868	5,367,007 44	477,025 37	511	94	715
1871	2,116	12,604,601 01	1,289,920 06	1,059	207	1,538
1872	1,854	8,567,185 11	1,000,422 41	948	100	1,128
1873	2,715	7,758,168 59	778,252 17	632	27	748
1874	2,986	10,117,653 50	1,113,112 39	580	18	628
1875	2,734	10,160,212 91	621,950 18	653	12	542
1876	2,339	7,001,358 77	868,198 41	651	25	298
1877	1,874	*g*14,073,031 17	2,052,973 58	1,030	156	1,244
1878	2,326	2,340,811 35	364,537 44	1,173	43	1,384
1879	2,060	3,755,831 39	608,632 02	1,125	94	2,870
1880	2,399	1,566,307 86	448,871 41	1,255	160	2,731
Total	66,599	166,181,255 23	50,001,818 72	24,671	3,161	21,345

a $2,665,276.01 of this collection were in prize and confiscation cases.
b $7,700,412.60 of this collection were in prize and confiscation cases.
c $9,055,867.41 of this collection were in prize and confiscation cases.
d $2,440,860.12 of this collection were in prize and confiscation cases.
e $1,416,232.42 of this amount were in internal-revenue cases, since 1867 under control, by law, of the Commissioner of Internal Revenue.
f $4,513,806.44 of this amount were in internal-revenue cases, since 1867 under control, by law, of the Commissioner of Internal Revenue.
g $10,876,600 of this amount involved in six suits against the Kansas Pacific Railroad Company to recover moneys illegally obtained from the United States.

EXHIBIT P.

Report of the warden of the jail.

SIR: The warden of the United States jail in the District of Columbia hereby submits his annual report for the year ended October 31, 1880.

Beyond the monotonous routine of every-day duties and ordinary prison-life, very little has occurred in this institution during the year to merit particular comment.

The guards and employés have discharged their respective duties with great efficiency, and have thus contributed to good order and excellent discipline which have been maintained.

The rules practiced for governing the institution have been mainly executed by the use of persuasion and moral influences, instead of resorting to physical force. While the inmates have been imprisoned for the purpose of punishment, for crimes committed, their reformation, as a further important purpose, has been kept in view. To this end, mild measures, kindly administered, have been used to enforce discipline, when the same could be done within the bounds of reason. When these have failed, which has rarely happened, obstinate and refractory prisoners have been treated with reduced rations, confinement to their cells, deprivation of receiving visits from their friends, and of other privileges usually accorded to prisoners of correct deportment. Perhaps not half a dozen cases have occurred where other appliances than those above enumerated have been brought into requisition to enforce compliance with the rules of the institution. Besides, every facility and encouragement have been given to Christian people and associations in the city to visit the prisoners for the purpose of contributing to their moral and religious improvement. Many of our citizens, ladies and gentlemen, especially representatives of the Ladies' Christian Temperance Union, and of the Young Men's Christian Associations, white and colored, have availed themselves of the opportunity thus afforded, and have earnestly engaged in the work of endeavoring to reform and reclaim these unfortunate victims of intemperance, vice, and crime. They have held religious exercises on Sunday with the inmates, and once or more during the week, and have supplied them liberally with good wholesome literature. There is evidence that their commendable work has been blessed with much fruit.

The separate system of imprisonment is the kind adopted in this prison for the males, but for obvious reasons two or more females are always placed in a room together.

By the separate system each male prisoner is placed in a separate cell, and remains there during the entire term of his imprisonment, except that he is out occasionally for exercise and such labor as sanitary means require. No prisoner while in his cell can see another, but may converse with those in adjacent cells at certain periods under prescribed rules, the construction of the cells and corridors being such as to admit of such conversation being carried on in a low voice without causing much annoyance. Communications with friends are permitted, but restricted by the demands of public policy and security and discipline of the prison.

Individual walks for exercise in the corridors are allowed from time to time, as circumstances may require, but the association or congregation of prisoners is carefully prevented. Among the advantages derived from this system are that it prevents mutual corruption and other evil influences arising from the association of prisoners, or their herding

together in large apartments; that it promotes the manhood and self-respect of the prisoners, which becomes apparent during their imprisonment, and is more beneficially felt after their return to their homes to mingle again in the affairs of life; that it is an additional safeguard against the undue tampering with prisoners by evil-disposed persons, and materially lessens their chances of escaping; that it admits of a variation of discipline by affording an opportunity for the separate study of the nature, temperament, and habits of each prisoner, and opens a way to judge each one according to his individual merits, and provide for his treatment as merit and circumstances may render just and proper. This system is beyond a doubt superior and preferable to any other in a jail like this, where nearly an equal proportion of inmates are only detained while awaiting trial or the action of the courts, and the remainder for the most part are incarcerated on sentences for terms of comparatively short duration. Thus our inmates, being kindly treated, well supplied with nutritious food and good beds, safe from the corrupting influences of vicious companions, secure from improper interference, and left alone to self-communion and to their own reflections, are in a condition and mood to receive and profit by moral instruction, and to more correctly comprehend the propriety and justice of their imprisonment.

The health of the prisoners has been generally good. Still, we had two cases of small-pox last winter during the prevalence of that disease in this city. Those cases caused us great anxiety, especially as most of the prisoners and officials were exposed to the disease by those two cases before they were sufficiently developed to enable the physician to determine the true character of the disease, and also because that disease existed in several localities in the city from which persons were arrested and committed to jail almost daily, thus constantly endangering us to renewed exposure to the contagion. The utmost care was exercised to guard against exposure and to prevent the spreading of the disease. Most thorough appliances were used and rigid sanitary measures practiced until the disease had entirely disappeared from the city, and all apprehensions of contagion therefrom had been dissipated. We have been more subject to malarial diseases this year than heretofore, but all such cases have yielded readily to medical treatment. With the above-mentioned exceptions, the health of the institution has been quite as satisfactory as heretofore. Two deaths have occurred, both from diseases existing at the time the persons afflicted therewith were committed. They were females. The same rigid discipline in regard to sanitary measures and the use of disinfectants has been enforced this year as heretofore, and with most satisfactory results.

Your attention is respectfully directed to the report of Dr. Noble Young, the jail physician, hereto annexed, for further information in regard to sanitary matters connected with the institution, and for a more detailed statement in regard to the health and general condition of the inmates. The prisoners have been supplied with an abundance of nutritious food of good quality and of varieties suitable to their condition, and such impecunious individuals as neither had means nor friends to provide clothing, when actually destitute have been supplied with such articles of clothing as were required by their absolute wants to render them comfortable and fit to be seen.

The city small-pox hospital is situated on grounds belonging to the jail premises and near to the jail building. It cannot be reached by any conveyance except by a road through the jail yard. The old street or roadway which formerly led to that hospital has been washed away, and for two or three years has been entirely impassable. No effort has

been made by the District authorities or any other to repair it, hence all small-pox cases are conveyed through the jail grounds to the great danger of spreading the infection to our inmates; indeed it was the opinion expressed by some of the physicians, and notably by a representative of the National Board of Health, that that loathsome disease was conveyed to the jail last winter in that way.

The hospital is a frame structure, and inadequate in many respects to answer the purposes demanded by the largely increased population of this District. It is respectfully submitted that such measures should be adopted as will secure its removal from the jail premises at an early day, and that a building more suitable for such purposes be constructed in a more isolated locality.

The jail building, out buildings, fences, and grounds have been kept in good condition and repair, and a new fence has been built on the east line of the premises to replace one that had gone to decay and become of no use. The expenditures for such repairs on the buildings, fences, and grounds, including painting, glazing, repairs of boilers, furnaces, steam-pipes, &c., connected with the steam-heating apparatus, together with the steam washing-machines, steam pump and engine, have required an expenditure of one thousand three hundred and twelve dollars and forty-six cents ($1,312.46) to keep them in good repair, which has been made, and they are now all in good condition.

The warden, as required by law, has transported to the penitentiary at Albany, N. Y., 77 convicts, who were sentenced to that prison by the supreme court of the District of Columbia, holding a criminal term. The expenditures connected with the transportation of such convicts were $1,949.82.

There were 41 boys transported to the Reform School of the District of Columbia by the warden, to whom they had been committed by the courts of this District for that purpose, as the law requires in such cases.

The annual salaries of physician, guards, engineer, assistant engineer, firemen, messenger, and cooks have amounted to $35,400.

The other expenses on account of the jail were as follows:

Subsistence	$13,749 75
Fuel and lights	3,478 64
Beds, bedding, and clothing	3,274 67
Medicines, medical stores, delicacies for the sick, and disinfectants	599 05
Stationery, blanks, and blank books	193 60
Keeping horse, cows, and repairs on wagon and harness	543 20
Furniture, hard and tin ware, cooking utensils, dishes, night tubs, and cell buckets	1,159 92
One gas-meter	151 50
Preparing for execution	205 23
Ice and miscellaneous articles	360 85
Soap and sal soda	403 14

No prisoner escaped from jail during the year.

The daily average number of prisoners incarcerated during the year was 194.

The total number of prisoners confined in jail during the year was 2,030, of whom 1,810 were males and 220 were females.

Of this number 14 were pardoned by the President of the United States, 5 were pardoned by the Commissioners of the District of Columbia, 4 boys were sent to the Reform School, 77 convicts were sent to the penitentiary at Albany, N. Y., 1 was executed, 2 died, 3 were sent to the United States Hospital for the Insane of the District of Columbia, and 1,699 were discharged. Remaining in jail at the close of the year, 188, of whom 170 were males and 18 females.

The various offenses charged against the prisoners committed to jail during the year are classified as follows:

	Males.	Females.
Murder	9	2
Assault with intent to kill	37	1
Assault and battery	440	65
Assault	104	6
Affray	41	6
Robbery	15	.....
Arson	4	2
Burglary and larceny	10	.....
Grand larceny	43	4
Forgery	10	1
Burglary	10	.....
Receiving stolen goods	1	.....
Embezzlement	9	1
False pretenses	7	.....
Rape	28	.....
Petit larceny	664	76
Presenting false claims	1	.....
Bigamy	4	.....
Resisting Metropolitan officers	23	.....
Keeping gambling-house	4	.....
Unlawfully opening letters	1	.....
Engaged in policy business	3	.....
Robbing graves	2	.....
Mayhem	1	.....
Bench-warrant	37	5
Forcible entry	2	.....
Threats of personal violence	47	1
Riot	1	.....
Keeping eating-house without license	1	.....
Selling liquor without license	1	1
Keeping bawdy-house	.....	4
Received from Albany penitentiary	2	.....
Perjury	.....	1
Keeping disorderly house	3	6
United States witnesses	2	3
Trespass	31	3
Contempt of court	15	5
Violating corporation ordinance	1	.....
Incorrigibility	13	.....
Carrying concealed weapons	5	.....
Vagrancy	12	.....
Maintaining nuisance	1	.....
Unlawful assembly	1	.....
Keeping vicious dog	2	1
Boisterous talking	6	.....
Profanity	1	.....
Public lewdness	.....	3
Fast driving	1	.....

Of the number committed during the year, as above stated, 1,245 were convicted and sentenced, of whom 1,071 were males and 174 females. They were convicted of offenses which are classified as follows.

	Males.	Females.
Murder	1	.....
Manslaughter	1	.....
Assault with intent to kill	6	.....
Robbery	1	.....
Burglary	1	.....
Burglary and larceny	10	.....
Rape	2	.....
Grand larceny	12	1
Forgery	4	1
Robbery and larceny	1	.....
False pretences	2	.....
Attempt to commit rape	1	.....
Petit larceny (second offense)	24	4
Receiving stolen goods	4	.....
Larceny and accessory to receiving stolen goods	1	.....
Resisting Metropolitan Police officers	6	.....
Bigamy	1	.....
Perjury	2	.....
Affray	36	7
Keeping disorderly house	4	7
Threats of personal violence	42	2
Contempt of court	11	4
Embezzlement	1	.....
Policy business	3	.....
Violating postal laws	1	.....
Trespass	29	3
Maintaining nuisance	1	.....
Public lewdness	.....	2
Keeping vicious dog	3	1
Petit larceny	423	48
Assault and battery	412	63
Assault	6	1
Incorrigibility	11	.....
Vagrancy	7	.....
Disorderly conduct	1	.....

Very respectfully, your obedient servant,

JOHN S. CROCKER, *Warden.*

Hon. CHARLES DEVENS,
Attorney-General United States.

HOSPITAL DEPARTMENT UNITED STATES JAIL, D. C.

SIR: In conformity to law I have the honor to offer you my report as to the sanitary condition of this prison.

We have suffered this year more than usual from the prevalence of malarial disease, our number of cases being fourfold more than any previous year. This has been, however, only in common with other parts of the city, in its suburbs, and indeed also with a large part of our country, even extending to the Northern States. The cases, though, some of them severe and apt to recur, have been manageable, no fatal cases occurring. The same preventive measures more rigidly enforced have been taken. The windows of the building have all been closed at 5 p. m., and not opened again until 10 a. m. the next morning. At the same time the temperature has been kept uniform, fires in cases of dampness or lowered condition of the atmosphere, and thorough ventilation at all times. Many other diseases incident to the habits of life of the subjects have occurred; two of them have been fatal, one of pneumonia, the other of cardiac disease.

We have had our usual number of venereal cases, generally of the same character presented annually. Gonorrhœa in all its stages, and syphilis of all grades, with a remarkable impregnancy of the genuine Hunterian chancre. A great deal of disease, such as inflammation, ulceration, &c., is presented, fairly referable to filth about the genitals before entering the prison. These are soon dissipated by treatment associated with regular bathing, which is practiced twice or thrice weekly upon every prisoner during the whole year, tepid water being used.

The many cases of alcoholism brought to us are still treated without liquor or opium, and my continued success for the past ten years satisfies me of the correctness of the system.

While the small-pox prevailed throughout the city, two cases occurred amongst our prisoners, both occasioned by contact with outside persons who, perhaps, carried the poison in their clothing. They were immediately sent to the small-pox hospital, where both recovered from the disease. A system of prevention was at once adopted, which secured us from any recurrence of this frightful malady. Every prisoner brought in, as well as those then in prison, was vaccinated, the new-comers were taken to the main bath-room, their clothing taken off, put into the steam-chest and submitted to a heat of 300 or 400 degrees for thirty minutes, then dressed in changed clothing; they were, after being vaccinated, put into their separate cells.

Every prisoner sent up to the court-room was examined before leaving the prison so as to ascertain as far as possible the existence of any disease, and none permitted to go upon whom the least suspicion rested. These precautions, so satisfactory in their results, were continued for some time after the disease had ceased to prevail, while the disinfectants which were freely used from the beginning were also continued.

I feel bound again to call attention to the necessity of a wall around this prison. If of a proper height I have no doubt it would assist in protecting from the malaria arising from the marshes, and would afford the security required when the prisoners are allowed to take exercise, which should be required of them every day to assist in securing their health.

Very respectfully,

N. YOUNG,
Physician United States Jail, D. C.

General J. S. CROCKER,
Warden United States Jail, D. C.

EXHIBIT Q.—*Report of the president of the board of trustees of the Reform School of the District of Columbia.*

REFORM SCHOOL OF THE DISTRICT OF COLUMBIA,
October 18, 1880.

SIR: Pursuant to the fourteenth section of the act entitled "An act revising and amending the various acts establishing and relating to the Reform School in the District of Columbia," approved May 18, 1876, I have the honor to submit the eleventh annual report of the school for the fiscal year ending June 30, 1880.

It is with much pleasure and gratification that the trustees can report great progress in the school. It is now better disciplined and officered than ever before, and the progress of the boys in their studies and general deportment is very satisfactory, and for this great improvement the trustees are indebted to the zeal, faithfulness, and ever-watchful care of the superintendent and the other officers of the school. The former superintendent, Mr. O. P. G. Clarke, to the regret of the board, resigned for the purpose of accepting another position under the government. Mr. Clark was in the school but a short time, but during that time he proved hlmself a most valuable and efficient officer, one that the school could not well afford to lose. His place was filled by Mr. S. C. Mullin, who was for many years the assistant superintendent, who has given entire satisfaction to the board of trustees, and has in every way proved himself to be worthy of the trust and competent to take charge of the school with its many arduous, delicate, and responsible duties. The promotion of Mr. Mullin to the position of superintendent left the office of assistant superintendent vacant, which was filled by the appointment of Mr. Charles H. Greely. Mr. Greely had been for a number of years an officer in the school, and discharged his duties with fidelity and to the entire satisfaction of the board of trustees, and being in every way competent to fill the vacant position, he was appointed to it, and since he has occnpied it he has demonstrated his entire fitness for the place by the energetic and thorough manner in which he has performed the duties devolving upon him.

At the close of the last fiscal year 157 boys remained in the school. There were committed during the year, 63; making the whole number under our care and instruction 220. Of this number 53 were discharged by the board, having deserved it by their good conduct, and 8 were absent without leave.

Although it may appear to those unacquainted with the school that there should be no one absent, or, in other words, no escapes, it will be seen that this is a very small percentage when the fact is taken in consideration that but little restraint is placed upon the freedom and liberty of the boys. There are no means of detaining them except the kindness they receive from the officers. We have neither walls, locks, nor bolts; we strive to make the institution a school and a school only, where the boys are taught to look to their officers as their friends. It is not strange, though, among so many boys that there should be some restless, dissatisfied spirits who are beyond the influence of kind treatment, and who would make an effort not only to leave the school but any place, even their homes, for the purpose, as they think, of having their liberty and doing as they choose. Under all circumstances, and as before said, the percentage of the boys absent without leave is very small, and reflects credit upon the care, vigilance, and kindness of the superintendent and those who aid him in his work.

Of the boys received during the year, 22 were committed by the president of the board of trustees; 7 by the supreme court of the District of Columbia; and 34 by the police court. For further statistics as to the age, parentage, and other details reference is respectfully made to the report of the superintendent herewith annexed.

The school was organized under the act of Congress approved the 25th day of July, 1866, and has therefore been in existence about 14 years. During that time there have been received 683 boys. Of this large number but five deaths have occurred, one by drowning and one who was sick when received, making really but 3 boys who have died whilst under our care. It is hardly necessary to comment upon this; the figures speak for themselves.

Preparations were made for gardening upon a more extensive scale than has heretofore been carried out, and the school has been abundantly supplied with all the vegetables and fruits that were required.

The fruit crop being particularly good during the season, the boys were abundantly furnished with peaches, grapes, melons, &c. This fruit was not only a pleasant and agreeable change but was of great benefit in a hygienic point of view as well as in economy, as during the fruit season we were enabled to do with less than one-half the usual quantity of flour, as the boys much preferred the fruit to bread.

During the year many repairs and improvements have been made to the buildings and grounds. Two large bathing pools have been built in the basement of the buildings, where the boys can disport and enjoy themselves daily during the warm weather and bathe regularly during the year.

This addition has been a great benefit and improvement, and the boys enjoy the luxury of being in the water, which to boys is at all times a great delight. One of the greatest improvements, the want of which has been most keenly felt, has been the erection of a laundry. Before this building was erected, the washing for the school had to be done by the boys, and required about 20 of them two days in each week to accomplish it. This work was not only repugnant to their tastes, but one which they should not have been called upon to perform. With the laundry the entire washing of the school can be done in one day with not more than 3 or 4 boys to attend the machinery; no money has ever been better spent at the school than the sum expended upon this building.

A vast amount of grading and filling up has been accomplished and many hundreds of shade and ornamental trees set out, all of which are growing finely and will in a few years make the grounds surrounding the buildings as beautiful and attractive as any in the District.

We have to thank the Commissioners of the District of Columbia for their kindness and generosity in offering to supply the school with all the shade trees and shrubbery necessary. The old barn has been repaired and placed in good order and will suffice for the wants of the school for the present.

A blacksmith shop has been erected, and now we are enabled to do our own blacksmithing, through which considerable saving is effected. The dormitories have had placed in them large and improved ventilators, which adds much to the health and comfort of the boys.

By the act approved June 4, 1880, making appropriations for the fiscal year ending June 30, 1881, it is provided "that one of the Commissioners of the District of Columbia, to be selected by the Board of Commissioners, shall be a trustee with all the powers, privileges, and duties of other trustees of the school." Under this provision of law the

Commissioners have selected of their number Maj. Thomas P. Morgan as such trustee, which selection is gratifying to the board. Major Morgan having had a long experience in the training and government of children, and with his deep interest in all causes of charity, will be a most valuable aid in furthering the usefulness and success of the school. The appointment of one of the Commissioners of the District of Columbia brings the school into closer sympathy with the government of the District, and our interests being now, more than ever, their interests, we anticipate much good and benefit therefrom.

By the same act the trustees of the school were authorized to use of the money due them from the trustees of Jay Cooke & Co. the sum of $8,500 to purchase the remainder of the "Peter farm," and the purchase has been effected. This land adjoins that of the school, is a part of the original tract, and it has long been the desire of the board to obtain possession of it, as it was greatly needed. It is the intention of the board to at once place it under cultivation, and to set out thereon a new apple orchard and other fruit trees. The apple trees on the present farm are old and are dying out rapidly.

There has been appropriated for the fiscal year of 1881 for the support of the school for all purposes the sum of $25,000. This will be inadequate, and a deficiency will have to be asked of Congress early during its next session.

For the fiscal year ending June 30, 1880, there was received from appropriations made by Congress, from the District of Columbia, and from sundry receipts of the school the sum of $37,921.68. About $7,000 of this was expended for repairs and improvements, leaving $30,921.68, which was used to meet the ordinary current expenses, and therefore, to meet such expenses for the present fiscal year, the sum of $6,000 additional will be required, and the board respectfully request that you will, at the proper time, present its wants to Congress.

The report of the treasurer is herewith submitted, and shows the receipts of the school to be as follows:

Appropriation by Congress	$20,000 00
Received from the District of Columbia on account of support of boys	16,967 98
Sundry receipts of the school for chair-work, farm produce, &c	953 70
Total	37,921 68

As to the manner in which this money has been expended reference is respectfully made to the report of the treasurer.

One great want remains unsupplied. To this attention has been repeatedly called; that is, the urgent necessity for more family buildings. During the past year the school has been filled to its utmost capacity, and, as president of the board, I have been compelled to refuse at least 100 applications for admission, and under the law to notify the courts of the District to send no more boys to the school, on account of there being no room therein for them. In consequence of this, many boys who could have found a good home with us were sent to the District jail and workhouse, where, instead of being placed under good influences, and receiving an education to fit them for the duties of life hereafter, they herded together with the lowest and vilest of criminals, and obtained an education which fitted them, not to be good citizens, a comfort to their parents, and an honor to their country, but for a career of vice and crime which will eventually drift them into the penitentiary, and may be to a worse fate. At a recent visit to the jail I found incarcerated therein, for petty offenses, owing to our inability, for want of room to receive them, 14 little boys from the tender age of eight to sixteen years.

Had we the proper accommodations, these boys would not have been found there. Owing to their associates and surroundings the future of most of them can easily be read. Instead of being a credit to themselves and families, many of them, hard as it may be to think it, will become a burden to the country, and supported at its expense in the jails and penitentiaries. Boys who have once been committed to the jail and associated with veterans in crime soon become contaminated by such association and influence and descend the steep incline of vice and crime with fearful rapidity. Is it not the duty of the government to prevent, as far as may be in its power, this evil, and is the government not to a great extent responsible when it has the power to prevent it? An ounce of prevention, it is said, is worth a pound of cure. Laying aside the morality of the question, not looking to the end attained, but as a matter of dollars and cents, it is cheaper to prevent than to punish crime. In this District there is a large class of boys, both white and colored, without homes or visible means of support, who find a precarious living by begging or worse. They should be cared for; and if our school should be enlarged to receive them many of these boys would be snatched as a brand from the burning, placed under good, kind, and religious influences, taught habits of industry, and given an education which will fit them to become good men and useful citizens. But if left to their present influences it is more than probable that many of them will eventually become a burden and an expense to the public. We are now enabled to accommodate about 170 boys, although even this number overcrowds the capacity of the school.

Had we the facilities, within a short time double or treble this number would find the way to the Reform School. This want is so serious and of such great importance that I feel I cannot dwell too long upon it.

We should have at least two more family buildings, which could be erected at an expense not exceeding $8,000 each. This sum is but trifling compared with the good results which will flow from it, and it is earnestly hoped that Congress will make the necessary appropriations to carry out this good work.

Workshops are much needed. We have now but few facilities for teaching the boys useful trades, and it is a great drawback to the usefulness of the school. In the laundry building we now have ample steam power to run all the necessary machinery required in the shops, and all that is wanted are the means of erecting shop buildings adjoining the laundry building. The proper shops could be erected and machinery and tools purchased for a sum not exceeding $2,500.

With these facilities the revenue of the school could be largely increased, and in a few years the appropriations needed would be materially lessened.

Constant repairs are needed to the buildings to preserve them. They should without delay be painted on the outside. There is but little or no fencing on the farm, the want of which is much felt, and to paint and repair the buildings and provide such fencing as is necessary an additional sum of $2,000 is required.

It is the intention of the board, now that they have obtained suitable land for that purpose in the purchase of the "Peter farm," to set out large quantities of willow, and to plant broom corn, which, in the course of a short time, will be suitable for the making of all kinds of willow-ware, brooms, etc. This will be an industry which will add to the revenue of the school and give the boys a trade; but, to carry out fully the wishes of the board, it will be necessary to have the facilities for run-

ning a turning lathe, to turn the necessary wood for broom-handles and other articles needed in the manufacture of willow and wooden ware.

During the year the boys have conducted themselves, with very few exceptions, in a manner most gratifying to the board of trustees and creditable to themselves. They have studied their lessons faithfully and performed their tasks with cheerfulness, and as a reward for their good conduct the board permitted them to attend the national fair held in this city, and gave them an excursion down the river, which they fully appreciated and enjoyed, only as boys can enjoy themselves. The excursion not only gave pleasure to the boys but their conduct on that occasion was so unexceptionable, and the manner in which they entered into the pleasures of the occasion so hearty, that the trustees, who accompanied them, felt more than repaid for their trouble in giving them this holiday. The expenses of this excursion were defrayed by the trustees and a few liberal and charitable citizens, and to the latter we wish to tender our thanks for their kindness to the boys. They are but boys, and like all boys they fully appreciate such attention and kindness, and it will be long before they forget the friends who enabled them to spend such a happy day.

Attention is invited to the report of the physician of the school. With the exception of some few slight attacks of malarial trouble there has been no sickness in the school during the year. Doctor Wells has been faithful in his attention, and the boys received the same care and skill as do his private patients.

To the superintendent and those associated with him is due the present high state of discipline which obtains in the school, and to them we cheerfully give the credit to which they are entitled for the care and attention which they have given to the discharge of their responsible duties.

On behalf of the board of trustees I desire sincerly to express their thanks for the courtesy and kindness you have ever extended to them and to thank you for the personal interest you have taken in the success and welfare of the school.

I have the nonor to be, very respectfully, your obedient servant,

A. J. FALLS,
President Board of Trustees.

Hon. CHAS. DEVENS,
Attorney-General.

Report of the treasurer of the Reform School of the District of Columbia.

REFORM SCHOOL OF THE DISTRICT OF COLUMBIA,
Washington, D. C., October 11, 1880.

SIR: I have the honor to hand you herewith a detailed statement of my receipts and disbursements as treasurer during the fiscal year ended June 30 last.

Very respectfully,

SAM'L W. CURRIDEN,
Treasurer.

A. J. FALLS, Esq.,
President Board Trustees.

STATEMENT.

RECEIPTS.

Appropriation by Congress	$20,000 00
District of Columbia, on account of support of boys therefrom	16,967 98
Sundry receipts of school for chair-work, farm produce, &c	953 70
Total	37,921 68

DISBURSEMENTS.

1879.		
July.	F. A. Fill, stationery	20 50
	W. B. Moses, furniture	183 93
	S. C. Mullin, superintendent, pay-roll, July	768 00
	S. C. Mullin, superintendent, sundry expenses	69 79
	Samuel Robinson, stone-cutting	56 25
	William Mawdsley, stone-cutting	20 00
Aug.	F. W. Howe, rent of land	125 00
	Hume, Cleary & Co., groceries	359 50
	William R. Riley, dry goods	177 23
	Barbour & Hamilton, groceries	129 56
	William M. Galt & Co., flour	33 00
	John A. Baker, seed, &c	14 44
	G. N. Holland, cement	27 13
	Morris Curry, mason work	67 50
	Potomac Terra Cotta Company, pipe	26 64
	Campbell & Kennedy, hardware	7 10
	K. Kneessi, harness	12 25
	G. Ryneal, jr., asphaltum, &c	4 78
	R. Cohen, shoe laces	3 60
	C. Mueller & Son, candy	7 60
	W. D. Wyvill, kitchenware	13 50
	Samuel R. Gettings, woodenware	8 67
	Browning & Middleton, groceries	74 24
	M. Lanxman, blacksmithing	23 52
	M. Lanxman, blacksmithing	14 47
	L. Baar, needles, &c	1 25
	William Ballantyne & Son, stationery, &c	6 63
	C. W. Thorn & Co., machine-oil	2 16
	M. W. Beveridge, table-ware	13 60
	H. E. Stevens, hats	28 50
	George King, leather	30 04
	Stott & Cromwell, drugs, &c	33 68
	Andrew J. Joyce, carriage	275 00
	J. C. Wall, agent, fire extinguishers	355 00
	William H. Hoover, meat	213 24
	J. B. Olcott & Son, hack hire	8 00
	C. A. Denekas, yeast	10 33
	James Talty, plumbing	83 87
	Saunders & Stayman, organ	125 00
Sept.	S. C. Mullin, superintendent, pay-roll, August	742 99
	William H. Hoover, meat	153 33
	George Ryneal, glass	18 75
	J. W. Boteler & Bro., tableware	25 10
	Homiller & Duvall, leather	4 74
	C. W. Thorn & Co., dry goods	22 97
	Wm. Ballantyne & Son, stationery	10 72
	Barbour & Hamilton, groceries	41 30
	George King, leather	9 36
	Browning & Middleton, groceries	92 16
	Campbell & Kennedy, hardware	14 68
	K. Kneessi, harness, &c	59 25
	Wm. R. Riley, dry goods	42 16
	J. B. Bryan & Bro., groceries	163 05
	Hume, Cleary & Co., groceries	116 27
	Morris Curry, mason work	62 50
	George N. Holland, cement, &c	41 70
	Potomac Terra Cotta Company, sewer-traps	3 50
	M. Lanxman, blacksmithing	25 07

1879.		
Sept.	Washington Gas-Light Company, gas, August	$31 50
	R. Leitch & Sons, castings	8 50
	S. C. Mullin, superintendent, sundries	49 27
	James Graham, labor	10 00
	Lewis Bryant, wages	18 00
	John R. Hodgson, wages	22 50
	George Watts, tableware	37 45
	T. J. Edwards, plumbing	58 45
	Wheatley Bros., lumber	18 76
	S. C. Mullin, superintendent, pay-roll September	760 93
	Washington Gas-Light Company, gas, July	22 50
	Chas. C. Borland, key-case	5 50
Oct.	S. W. Curriden, services	125 00
	W. H. Hoover, meat	143 83
	S. C. Mullin, superintendent, sundries	53 33
	J. A. Baker, wheelbarrow, &c	24 07
	A. S. Yost, building blacksmith shop	42 75
	M. Lanxman, blacksmithing	15 97
	G. N. Holland, cement, brooms, &c	47 80
	National Republican, advertising for proposals	10 68
	M. W. Beveridge, tableware	18 90
	Washington Gas-Light Company, gas, September	40 50
	W. H. Hoover, printing	9 00
	Wm. R. Riley, dry goods	113 24
	Lewis Baar, sewing-machine	35 20
	C. W. Thorn & Co., hats, &c	26 41
	Hume, Cleary & Co., groceries	201 77
	K. Kneessi, harness	9 40
	Wm. Ballantyne & Son, stationery	5 30
	George Ryneal, jr., paint, &c	36 23
	Geo. Watts & Co., tableware	19 38
	R. Cohen, shoes	58 00
	J. B. Bryan & Bro., groceries	34 87
	Browning & Middleton, groceries	102 48
	John J. Gavin, hack hire	8 00
	Campbell & Kennedy, hardware	63 52
	George King, leather	26 77
	Stott & Cromwell, medicine	3 70
	J. R. Hodgson, labor	32 50
	T. J. Edwards, plumbing	32 17
	W. W. McCullough, lumber	138 98
	C. A. Wells, M. D., services	22 00
	Potomac Terra-Cotta Company, pipe	67 90
	James E. Bright, repairing roof	216 00
	The Republic, advertising	4 00
	Wm. M. Galt & Co., flour, &c	106 40
	Columbia Railway Company, manure	132 00
	Wm. B. Peddrick, services	25 00
	Morris Curry, wages	68 12
	Gray & Noyes, castings	21 81
	Evening Star Company, advertising for proposals	12 37
	Washington Brick Machine Company, brick	58 50
	L. W. Guinand, coal	1,059 93
	Samuel Emery, coal	68 00
	Geo. C. Maynard, rent telephone	14 17
	David Mahoney, plastering	82 50
	A. Nailor, jr., hack hire	24 00
	John Bell, 1 horse	100 00
	J. B. Bryan, bull	10 00
	S. C. Mullin, superintendent, pay-roll, October	769 33
Nov.	F. W. Howe, rent of farm	125 00
	J. R. Hodgson, carpenter work	30 00
	Chas. A. Wells, M. D., services	20 00
	Wm. R. Riley, dry goods	246 64
	W. W. McCullough, lumber	111 78
	Hume, Cleary & Co., groceries	203 19
	George Watts, tableware	13 50
	George Ryneal, jr., paint, &c	41 20
	Wm. Ballantyne & Son, stationery	13 30

1879.		
Nov.	C. W. Thorn & Co., hats	86 02
	Lansburgh & Bro., dry goods	149 18
	John A. Baker, seed	31 16
	Barbour & Hamilton, groceries	64 01
	J. B. Bryan & Bro., groceries	32 15
	Geo. King, leather, &c.	40 36
	Browning & Middleton, groceries	52 43
	R. Cohen, shoe laces	3 60
	Morris Curry, mason work	65 00
	Geo. N. Holland, cement, &c.	25 73
	T. J. Edwards, plumbing	100 00
	Stott & Cromwell, drugs	10 15
	Campbell & Kennedy, hardware	13 88
	Henry Franc, caps	96 60
	Wm. M. Galt & Co., flour	259 60
	L. O. Weissman, vegetables	4 00
	Chas. J. Fanning, repairing roof	30 00
	Wm. H. Hoover, meat	149 28
	A. Nailor, jr., hack hire	20 00
	B. W. Reed's Sons, groceries	30 65
	J. E. Berry, hack hire	8 00
	Washington Gas-Light Company, gas, October	51 75
	S. C. Mullin, superintendent, sundries	36 51
	C. A. Denekas, yeast	10 52
	Notley Anderson, repairing barn	498 00
	Jas. E. Bright, ventilators and repairing roof	108 25
	T. J. Edwards, plumbing	112 50
	S. C. Mullin, superintendent, pay-roll, November	754 33
	John Bell, 1 horse	130 00
Dec.	Washington Gas-Light Company, gas, November	60 75
	J. E. Berry, carriage hire	4 00
	J. B. Olcott & Son, carriage hire	4 00
	Geo. N. Holland, woodenware	20 85
	W. W. McCullough, lumber	92 08
	Potomac Terra-Cotta Company, pipe	16 24
	Geo. King, leather	14 25
	Browning & Middleton, groceries	170 24
	J. B. Bryan & Bro., meat	4 68
	Campbell & Kennedy, hardware	18 24
	Wm. H. Hoover, meat	162 38
	Barbour & Hamilton, ham	5 10
	Geo. Watts, tableware	5 25
	Geo. Ryneal, jr., glass, &c	44 19
	Henry Franc, caps	16 67
	William Ballantyne & Son, books	10 32
	Wm. R. Riley, dry goods	217 67
	H. Adler, agent, dry goods	6 60
	C. W. Thorn & Co., yarn	9 50
	Hume, Cleary & Co., groceries	209 26
	John A. Baker, seed	14 50
	Allison Nailor, jr., hack hire	12 00
	Washington Brick Machine Company, brick	45 50
	Wm. M. Galt & Co., flour, &c	274 97
	S. E. Haskins & Co., manure	30 40
	J. R. Hodgson, carpenter work	29 37
	S. C. Mullin, superintendent, sundries	42 10
	Morris Curry, mason work	60 00
	Morris Curry, mason work	25 00
	F. A. Conrad, repairing furniture	24 25
	Gibson Bros., printing, &c.	9 00
	S. C. Mullin, superintendent, pay-roll, December	765 83
	J. R. Hodgson, carpenter work	23 75
	W. B. Peddrick, services	25 00
	S. W. Curriden, services	125 00
1880.		
Jan.	Gheen & Osborn, hack hire	4 00
	George King, leather	55 72
	William H. Hoover, meat	140 22
	John A. Baker, farming tools, &c	25 20

1880.		
Jan.	W. S. Anderson & Co., apples	$12 00
	Stott & Cromwell, medicine	8 20
	Carl Muller & Son, sundries	25 03
	Campbell & Kennedy, hardware	19 63
	Browning & Middleton, groceries	74 75
	J. B. Bryan & Bro., groceries	51 01
	C. A. Wells, M. D., services	58 00
	George Watts, tableware	26 12
	C. W. Thorn & Co., dry goods	10 67
	Lansburg & Bro., boys' shirts	14 25
	K. Kneessi, harness	11 75
	George Ryneal, jr., paint, glass, &c	9 45
	William R. Riley, dry goods	222 62
	Hume, Cleary & Co., groceries	338 43
	William Ballantyne & Son, books, &c	21 61
	Barbour & Hamilton, groceries	29 45
	Washington Gas-Light Company, gas	74 25
	R. Leitch & Sons, repairing pump	9 75
	Geo. N. Holland, woodenware, &c	25 22
	S. C. Mullin, superintendent, sundries	30 30
	W. M. Galt & Co., flour	217 50
	Sinclair & Aschenbach, repairing steam-pump	118 21
	W. B. Williams, furniture	20 34
	W. W. McCullough, lumber	16 00
	A. Nailor, jr., hack hire	12 00
	Washington Brick-Machine Company, brick	13 00
	John I. Gavin, hack hire	7 00
	S. C. Mullin, superintendent, pay-roll, January	774 33
	John Carroll, laying stone	20 00
	Eugene Daily, laying stone	20 00
Feb.	George N. Holland, tools	11 35
	Hume, Cleary & Co., groceries	151 89
	George King, leather	49 90
	J. B. Bryan & Bro., groceries	16 51
	Browning & Middleton, groceries	128 51
	C. M. Towson, dry goods	16 12
	Geo. Ryneal, jr., paint, &c	5 30
	F. W. Howe, rent of land	125 00
	Wm. Ballantine & Son, stationery	14 41
	Wm. R. Riley, dry goods	155 08
	Barbour & Hamilton, groceries	38 80
Mar.	S. C. Mullin, superintendent, pay-roll, February	762 33
	S. C. Mullin, superintendent, sundries	26 32
	Wm. M. Galt & Co., flour, &c	234 60
	George Watts, tableware	4 15
	F. A. Conrad, repairing furniture	8 00
	Jas. E. Bright, spouting	7 05
	C. M. Towson, cloth	11 53
	George King, leather	31 65
	Hume, Cleary & Co., groceries	280 61
	Hume, Cleary & Co., groceries	170 65
	Wm. H. Hoover, meat	185 04
	Wm. H. Hoover, meat	163 28
	Washington Gas-Light Company, gas, January	66 00
	Washington Gas-Light Company, gas, February	56 00
	Cambell & Kennedy, hardware	9 95
	Wm. R. Riley, dry goods	34 42
	Notley Anderson, building carriage-house	274 00
	Gheen & Osborn, hack hire	4 00
	S. C. Mullin, superintendent, sundries	32 99
	Chas. A. Wells, M. D., services	36 00
	John A. Baker, seed	8 66
	Lewis Baar, repairing machines	8 40
	A. Nailor, hack hire	20 00
	Stott & Cromwell, medicines	3 20
	Gibson Brothers, printing	4 50
	C. A. Denekas, yeast	10 52
	John Saul, trees and plants	101 70
	S. E. Haskins & Co., manure	21 60
	O. C. Bullard, services	80 00

1880.		
Mar.	L. Wm. Guinand, coal	$82 37
	Baker, Smith & Co., repairing furnace, &c	626 00
	S. C. Mullin, superintendent, pay-roll, March	774 33
	Paul Hyser, plant-pots	10 00
	Morris Curry, mason work	17 25
	S. W. Curriden, services	125 00
	W. B. Peddrick, services	25 00
Apr.	Wm. R. Riley, dry goods	95 67
	Wm. H. Hoover, meat	187 64
	Lansburg & Bro., dry goods	4 10
	W. B. Williams, furniture	12 00
	Barbour & Hamilton, groceries	86 62
	Geo. King, leather	52 61
	Theo. B. Engel, honey	23 10
	Browning & Middleton, groceries	45 70
	J. B. Bryan & Bro., groceries	59 88
	Wm. M. Galt & Co., flour, &c.	333 58
	G. N. Holland, tools, &c	15 90
	Hume, Cleary & Co., groceries	226 20
	S. C. Mullin, superintendent, sundries	25 62
	Washington Gas-Light Company, gas, March	50 00
	John A. Baker, sash, frames, &c	39 55
	Geo. Ryneal, jr., glass, &c	4 03
	Campbell & Kennedy, hardware	13 50
	W. W. McCullough, lumber	43 48
	K. Kneessi, repairing harness, &c	6 75
	L. Salomon, one cow	26 00
	O. C. Bullard, services	32 00
	T. J. Edwards, plumbing	79 29
	A. Nailor, hack hire	16 00
	S. C. Mullin, superintendent, pay-roll, April	774 33
May.	Columbia Railway Company, manure	158 40
	T. L. Hume, president, stock	150 00
	T. Geary, hack hire	9 00
	Wm. Ballantyne & Son, stationery	8 85
	Geo. Watts, tableware	32 84
	S. C. Mullin, superintendent, sundries	29 27
	Jas. K. Probey, spring-wagon	187 00
	Peter Crowe, wages	39 00
	Hume, Cleary & Co., groceries	201 39
	Paul Hyser, flower-pots	9 00
	Wm. M. Galt & Co., flour and feed	291 50
	L. Wm. Guinand, coal	82 50
	F. W. Howe, rent of land	125 00
	C. A. Wells, M. D., services	36 00
	Geo. Watts, kitchenware	15 03
	Wm. R. Riley, dry goods	177 76
	Browning & Middleton, groceries	167 80
	Henry Franc, caps	5 25
	H. Adler, agent, thread	6 35
	J. A. Baker, seed	88 44
	Geo. King, leather	42 26
	Campbell & Kennedy, hardware	2 15
	J. B. Bryan & Bro., groceries	13 20
	Wm. Ballantyne & Son, books	13 48
	Barbour & Hamilton, groceries	70 66
	G. N. Holland, guano, &c	46 82
	C. A. Denekas, yeast	9 99
	S. E. Haskins & Co., manure	20 00
	National Capital Telephone Company, service, &c	57 75
	Washington Gas-Light Company, gas, April	38 00
	R. Joseph, trustee, expenses to Philadelphia and return	20 75
	R. Leitch & Son, brass-work	3 50
	Wm. H. Hoover, meat	142 92
	Stott & Cromwell, medicines	17 08
June.	S. C. Mullin, superintendent, pay-roll, May	789 33
	S. C. Mullin, superintendent, sundries	15 87
	John Dixon, kalsomining	30 00
	Jeremiah Foley, digging well	42 00
	Peter Crowe, wages, May	30 00

1880.		
June.	John A. Baker, seed, &c	$27 55
	Washington Gas-Light Company, gas, May	28 00
	L. Wm. Guinand, coal	33 03
	Browning & Middleton, groceries	86 42
	J. M. Follin, dried fruit	12 36
	Wm. M. Galt & Co., feed	51 92
	Wm. R. Riley, dry goods	271 92
	J. B. Bryan & Bro., groceries	60 31
	R. Cohen, shoe-strings	9 00
	C. M. Towson, dry goods	24 21
	Campbell & Kennedy, hardware	19 75
	Barbour & Hamilton, groceries	137 69
	George Watts, tableware	26 00
	K. Kneessi, harness	5 50
	Geo. N. Holland, cement, &c	15 90
	Geo. King, leather, &c	54 57
	Henry Franc, hats	21 25
	Wm. Ballantyne & Son, stationery	2 40
	Stott & Cromwell, drugs	8 20
	Wm. H. Hoover, meat	138 39
	Hume, Cleary & Co., groceries	230 63
	Co-operative Ice Company, ice	140 41
	W. B. Williams, furniture	275 24
	F. W. Howe, rent of land	83 32
	Ch. Erbach, water-tanks	55 00
	W. W. McCullough, lumber	68 32
	Gibson Bros., printing	7 35
	S. C. Mullin, superintendent, pay-roll, June	789 33
	Peter Crowe, wages, June	30 00
	Wm. B. Peddrick, services	25 00
	S. W. Curriden, services	125 00
	John I. Gavin, hack hire	3 50
	Thos. Canevaugh, agent, two fire extinguishers	90 00
	John Saul, trees and plants	73 60
	Wm. H. Hoover, meat	174 84
	W. B. Williams, oil-cloths	3 00
	Geo. Watts, table-cloth	11 30
	Wm. M. Galt & Co., flour and feed	227 50
	Barbour & Hamilton, groceries	137 06
	Hume, Cleary & Co., groceries	134 80
	Geo. Ryneal, jr., glass	3 70
	Geo. N. Holland, tools	13 65
	Wm. Ballantyne & Son, stationery	24 25
	Lewis Baar, agent, oil, &c	8 05
	H. Franc, hats	62 37
	John A. Baker, tools	8 14
	C. A. Wells, M. D., services	40 00
	Campbell & Kennedy, hardware	3 54
	Stott & Cromwell, medicines	5 10
	Browning & Middleton, groceries	91 48
	Geo. King, leather, &c	49 65
	Andrew J. Joyce, repairs to carriage	34 40
	Augustus Davis, jr., building laundry	1,985 00
	S. C. Mullin, superintendent, sundries	19 24
	Wm. R. Riley, dry goods	76 11
	O. C. Bullard, services and expenses	139 20
	J. B. Olcott & Son, hack hire	24 00
	T. C. Basshar & Co., laundry machines, &c	1,450 00
	L. Wm. Guinand, coal	54 77
	Washington Gas-Light Company, gas	18 00
	A. Nailor, jr., hack hire	18 00
	C. A. Denekas, yeast	7 09
	Sinclair & Aschenbach, repairs to pump	11 15
	Keyes & Co., hack hire	7 00
	W. D. Wyvill, repairing furnaces	118 00
	Columbia Railway Company, manure	105 60
	Washington Brick Machine Company, brick	16 00
	S. C. Mullin, superintendent, weighing ice, &c	16 50
	Total	37,921 68

Report of the Physician of the Reform School of the District of Columbia.

REFORM SCHOOL OF THE DISTRICT OF COLUMBIA,
October 20, 1880.

GENTLEMEN: In submitting my report for the past fiscal year, ending June 30, 1880, I am glad to be able to state that the health of the inmates of this institution has been generally good. While necessarily among so many boys there must be many who at various times need the oversight and care of a physician, yet we have had no cases of serious illness among them. I regret to report that Miss Mary Enzel, an efficient assistant in the dining-room department, who had been employed in the institution only a short time, died of heart-disease, after a very brief illness, February 25. During the threatened epidemic of small-pox in the District every precaution was taken to prevent a spread of the disease to the institution. Visitors were absolutely prohibited the grounds, and not only the boys but every one in any manner connected with the institution thoroughly vaccinated.

Respectfully,

CHAS. A. WELLS, M. D.,
Attending Physician.

To the BOARD OF TRUSTEES OF THE REFORM SCHOOL,
District of Columbia.

Report of the Superintendent of the Reform School of the District of Columbia.

REFORM SCHOOL OF THE DISTRICT OF COLUMBIA,
October 11, 1880.

GENTLEMEN: Agreeably to the provisions of law I have the honor to report to you in brief the operations of the school during the fiscal year ended June 30, 1880, covering the eleventh year of the existence of the institution.

During the year the health of the school has been remarkably good. We have entirely escaped any general sickness, and no death or accident has occurred.

The work of the school has been zealously continued. The progress of the classes has been satisfactory, such as to give every promise of the feasibility of adopting a higher standard of studies for the older inmates.

The boys have continued their daily recitations from the Bible, and these exercises, with the services on Sunday, have been effective for good. At these services the two families have always united, and the frequent attendance of the members of your board and other friends of the institution on these and on many other occasions throughout the year has been in every way helpful in the work of reform, awakening in the heart of every inmate of the school a response to the kindly interest that has been shown.

Your frequent visits are a source of keen satisfaction and encouragement to the officers of the school, knowing that in doing so you will become better acquainted with the responsibilities devolved upon them, the embarrassments and difficulties that are to be met and overcome, and the degree of success, if any, which has been accomplished.

At the close of the previous year there were remaining in the school 157 boys; committed during the year, 63; making 220 the number cared for. Of this number 53 were discharged and 8 absent without leave, leaving 159 in the school at the close of the year.

Those received were committed by the following authorities: President

of the board of trustees, 22; supreme court of the District of Columbia, 7; police court of the District of Columbia, 34.

The ages of those received were as follows: Six years, 2; seven years, 1; eight years, 1; nine years, 2; ten years, 6; eleven years, 6; twelve years, 9; thirteen years, 8; fourteen years, 10; fifteen years, 18.

Birthplace of those admitted: District of Columbia, 41; Virginia, 7; New York, 2; Maryland, 6; Massachusetts, 1; Philadelphia, 2; Mississippi, 1; Georgia, 1; unknown, 2.

Parentage of those admitted: American, 13; colored, 28; German, 4; English, 2; Irish, 15; French, 1.

The commitments were for offenses as follows: Incorrigibility, 31; larceny, 22; petit larceny, 3; burglary and larceny, 2; assault, 1; vagrancy, 4.

Of those admitted, 9 had neither father nor mother; 14 had lost father, and 5 had lost mother; 35 had both parents living.

There were gathered from the farm and garden during the fiscal year as large quantities of vegetables and produce as in any previous year. By reason of the change of gardeners, I am unable to give the usual detailed statement of receipts.

During the year I have received in payment for chair-work and sundry sales of old barrels, rags, &c., and turned the same over to the treasurer, the sum of $953.70.

During the year the many long-needed repairs and improvements to the buildings and grounds have been made. Among these improvements have been the bathing-pools in the basement; new blacksmith-shop, enabling the school to do its own blacksmithing; the reconstruction of the barn, with additional accommodations for cattle and the vehicles of the school; the cold-air flues in the basement, and the ventilators in all the dormitories; the overhauling of the furnaces and heating apparatus, the construction of a building for a laundry and the purchase of the necessary machinery and engines thereof. Besides, additions have been made to our greenhouses; a number of patent chemical fire-extinguishers have been purchased; a large amount of fencing has been made, giving to the school better defined boundaries for playgrounds than heretofore; and for the large extent of completed grading about the buildings and their approaches; the necessary shrubbery and young trees have been bought.

Much attention has been given during the year to the outdoor work of the farm and gardens, which has precedence in fair weather of all indoor work. I believe that the experience and knowledge gained in outdoor work on the farm is in value far beyond any that can be gained in the shops, at least with the very limited facilities now at the command of the school in this respect.

With additional farm facilities, completed fencing, abundance of water for stock, and additional farming implements, this branch of the work of the school can be made a source of considerable revenue to the institution.

I beg to commend to you the officers and teachers of the school, who have given cheerful and efficient attention at all times to their respective duties.

Very respectfully,

S. C. MULLIN,
Superintendent.

The BOARD OF TRUSTEES.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 10.

CONTINGENT EXPENSES OF THE WAR DEPARTMENT.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Statement of expenditures from the appropriations for contingent expenses of the War Department.

DECEMBER 9, 1880.—Read twice, referred to the Committee on Expenditures in the War Department, and ordered to be printed.

WAR DEPARTMENT,
Washington City, December 8, 1880.

The Secretary of War has the honor to transmit to the House of Representatives a statement of the expenditures from the appropriations for the contingent expenses of the War Department and its bureaus, for the fiscal year ended June 30, 1880.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE SECRETARY OF WAR.

Date.	To whom paid.	On what account.	Amount.
1879.			
July 3	Washington and Georgetown Railroad Company.	Tickets	$30 00
18	Frank Hume	Matches, soap	18 00
23	National Republican Company	Subscription	6 00
26	Joseph N. Wright	Soap	8 88
28	Washington and Georgetown Railroad Company.	Tickets	30 00
			205 80
30	J. W. Boteler & Bro	Spittoons and dusters	
31	Catharine Graham	Washing towels	15 00
Aug. 1	William Callow	Subscription to New York Tribune	1 50
1	Murray & Barker	Shoeing horses	5 00
1	A. W. Hodgman	Hanging clocks	5 00
4	Great Falls Ice Company	Ice	33 16
6	William S. Mitchell	Window shades, towels	51 50
6	City post-office	Paper wrappers	10 60
9	Morell Marean	Telephone apparatus	27 00

OFFICE OF THE SECRETARY OF WAR—Continued.

Date.	To whom paid.	On what account.	Amount.
1879.			
Aug. 14	Lee Donnelly	Freight	$1 10
19	Francis B. Mohun	Stationery	866 05
19	B. Westermann & Co	Freight	57
21	W. C. & F. P. Church	Subscription to Army and Navy Journal	6 00
22	Washington and Georgetown Railroad Company.	Tickets	30 00
25	City post-office	Stamps	15 00
30	Catharine Graham	Washing towels	15 00
30	John McClelland	Fire-plug key	75
Sept. 1	Pay-roll	Labor	9 65
1	Knox's Express Company	Hauling carpets	2 69
1	J. W. Boteler & Bro	Ice pitchers, &c	162 65
1	William Callow	Subscription to New York Tribune	1 50
1	Murray & Barker	Shoeing horses	2 00
3	Knox's Express Company	Freight and hauling	16 74
6	John McDermott & Bros	Repairing mail-wagon	8 10
11	William Scott	Hanging portraits	3 50
17	Thomas Norfleet & Co	Repairing harness	56 78
19	Francis B. Mohun	Stationery	408 95
20	William M. Davis	Safety matches	50 00
22	Knox's Express Company	Freight	3 23
23	Washington and Georgetown Railroad Company.	Tickets	10 00
29	Joseph N. Wright	Soap	10 32
29	Knox's Express Company	Freight	75
30	Louis Koerth	Office expenses	22 30
30	Catharine Graham	Washing towels	15 00
30	William Callow	Subscription to New York Tribune	1 50
30	Oscar L. Berger	Regulating clocks	12 00
30	Charles F. Moore	Carbolic powder	16 90
30	J. W. Boteler & Bro	Ice pitchers, &c	106 00
30	Murray & Barker	Shoeing horses	10 00
30	Francis B. Mohun	Stationery	306 91
Oct. 3	City post-office	Deficient postage	2 96
3	Washington and Georgetown Railroad Company.	Tickets	30 00
7	Samuel Hodgkins	Portrait frame	20 00
15	Knox's Express Company	Hauling	1 00
16	City post-office	Newspaper wrappers	21 20
31	Catharine Graham	Washing towels	15 00
31	Murray & Barker	Shoeing horses	10 00
Nov. 1	William Callow	Subscription to New York Tribune	1 50
3	Frank Hume	Matches	16 87
3	Washington and Georgetown Railroad Company.	Tickets	30 00
4	James J. Chapman	Lithogram	7 00
8	Charles F. Moore	Castor oil, &c	5 55
17	Elihu Bradley	Taking up marble tiles	2 80
21	Francis B. Mohun	Stationery	302 50
29	Catharine Graham	Washing towels	15 00
Dec. 1	William Callow	Subscription to New York Tribune	1 50
1	Murray & Barker	Shoeing horses	9 00
2	Charles F. Moore	Alcohol, &c	4 00
2	Washington and Georgetown Railroad Company.	Tickets	30 00
12	Mary Cruit	Carriage hire	2 00
17	J. R. Dickson	Refilling hectographs	5 00
19	Francis B. Mohun	Stationery	609 70
30	Louis Koerth	Office expenses	8 00
31	Catharine Graham	Washing towels	15 00
31	William Callow	Subscription to New York Tribune	1 50
31	Oscar L. Berger	Regulating clocks	13 50
31	B. Robinson & Co	Overcoats for mail drivers	50 00
31	Murray & Barker	Shoeing horses	9 75
31	City post-office	Deficient postage	1 70
31	J. W. Boteler & Bro	Dusters, &c	60 25
31	M. Marean	Wire cord and push button	2 50
1880.			
Jan. 2	Washington and Georgetown Railroad Company.	Tickets	30 00
9	William H. Boyd	Directories	50 00
9	W. L. Sears	Refilling hectograph	1 50
10	L. R. Hammersly & Co	Book	1 00
13	M. R. Thorp	Removing snow	2 65
14	G. M. Wight	Furniture	101 00
16	Mantz & Co	Harness, &c	78 75
17	G. N. Sullivan	Books for library	32 00
17	E. M. Whitaker & Son	Spofford's Almanac	1 50
17	Mary Cruit	Carriage hire	1 50
19	Francis B. Mohun	Stationery	534 05

OFFICE OF THE SECRETARY OF WAR—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Jan. 27	Joseph N. Wright	Soap	$4 13
29	John L. Ginck & Co	Subscription to Law Reporter	3 00
31	Catharine Graham	Washing towels	15 00
31	William Callow	Subscription to New York Tribune	1 50
31	M. R. Thorp	Storing coal, &c	4 00
31	Murray & Barker	Shoeing horses	8 25
31	Daniel Leonard	Carpenters' materials	27 25
31	John McDermott & Bros	Repairing mail-wagon	35 40
Feb. 2	Washington and Georgetown Railroad Company.	Tickets	25 00
7	Charles F. Moore	Cleaning fluid	10 25
10	C. C. Wilson	Rubber stamp	2 00
12	City post-office	Stamps and wrappers	14 60
18	Hartley & Graham	Subscription to Field Glass	1 00
20	Francis B. Mohun	Stationery	941 49
21	Washington and Georgetown Railroad Company.	Tickets	30 00
26	Joseph N. Wright	Soap	4 14
27	William S. Mitchell	Spring shades	50 00
28	Catharine Graham	Washing towels	15 00
28	William Callow	Subscription to New York Tribune	1 50
28	Murray & Barker	Shoeing horses	11 63
28	H. Baumgarten & Bro	Rubber stamp	8 00
28	Francis B. Mohun	Stationery	488 10
Mar. 9	J. F. Mann	Subscription to Post	4 55
11	Washington and Georgetown Railroad Company.	Tickets	30 00
18	Capt. W. H Bell	Soap	13 20
23	F. Lemmer	Repairing locks and keys	9 00
30	Claxton, Remsen & Haffelfinger	Book	1 50
30	Louis Koerth	Office expenses	19 27
31	William Callow	Subscription to New York Tribune	1 50
31	Oscar L. Berger	Regulating clocks	12 00
31	Murray & Barker	Shoeing horses	11 00
31	Honore Keliy	Labor	15 00
31	Great Falls Ice Company	Ice	14 70
31	Catharine Graham	Washing towels	15 00
31	F. Lemmer	Repairing locks and keys	11 00
31	F. A. Schneider & Son	Hardware	64 73
31	H. Semken	Clock	7 50
31	City post-office	Deficient postage	3 27
Apr. 10	M. Cruit	Hire of carriage	3 00
12	Washington and Georgetown Railroad Company .	Tickets	30 00
20	Francis B. Mohun	Stationery	491 25
23	J. Brad. Adams	Automatic shading pens	2 00
28	Telfair, Snedeker & Rucker	Machine oil	36 85
29	Charles F. Moore	Sweet oil, &c	7 25
30	Murray & Barker	Shoeing horses	11 00
30	William Callow	Subscription to New York Tribune	1 50
30	Catharine Graham	Washing towels	15 00
May 8	Washington and Georgetown Railroad Company.	Tickets	30 00
8	Great Falls Ice Company	Ice	21 75
17	Francis B. Mohun	Stationery	586 70
28	Joseph N. Wright	Soap	7 39
31	William Callow	Subscription to New York Tribune	1 50
31	Murray & Barker	Shoeing horses	10 25
31	Catharine Graham	Washing towels	15 00
June 3	Washington and Georgetown Railroad Company.	Tickets	15 00
26	William P. Kelly	Repairing buckets	1 25
30	Catharine Graham	Washing towels	15 00
30	Louis Koerth	Office expenses	1 35
30	William Callow	Subscription to New York Tribune	1 50
30	City post-office	Deficient postage	2 89
			8, 000 00
	Amount appropriated		8, 000 00
	Amount expended		8 000 00

OFFICE OF THE ADJUTANT-GENERAL.

1879.			
July 14	E. Morrison	Book paper	$25 50
15	John Keyworth	Car tickets	23 40
23	John D. Sabine	Freight	25

OFFICE OF THE ADJUTANT-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1879.			
July 25	W. M. Shuster & Sons	Cotton	$19 31
25	National Republican Company	Subscription	6 00
25	M. W. Beveridge	Spittoons, &c	12 38
28	Robert Clarke & Co	Book	5 00
Aug. 1	E. Morrison	Flat paper	168 00
1	Wilhelm & Neumann	Picture rod	12 60
2	Francis B. Mohun	Stationery	437 87
4	J. W. McKnight	Picture brackets	3 00
4	Mary French	Washing towels	51 45
6	Joseph Gawler	Varnishing picture frame	2 50
7	Kennebec Ice Company	Ice	77 09
7	Washington Gas Company	Gas	10 80
8	Francis Miller	Paint-brushes and oil	10 90
26	Charles F. Moore	Camphor, &c	16 35
27	F. Schneider & Son	Hardware	14 57
29	Z. D. Gilman	Glass	3 55
30	Mary French	Washing towels	53 65
Sept. 3	Adams Express Company	Freight	1 05
5	....do	....do	1 10
5	Barker Bros	Ice	77 84
6	Washington Gas Company	Gas	10 80
6	Joseph Jewett	Storing fuel	29 50
6	G. W. Chamberlen	Painting	225 93
8	Francis B. Mohun	Stationery	235 52
12	Joseph Jewett	Whitewashing	2 00
16	John Keyworth	Car tickets	31 20
20	W. M. Davis	Safety matches	12 50
30	Mary French	Washing towels	57 35
30	Francis B. Mohun	Stationery	407 35
30	Washington Gas Company	Gas	9 23
30	Barker Bros	Ice	73 51
30	Adams Express Company	Freight	1 25
30	Charles F. Moore	Sponge	10 75
30	F. Schneider & Son	Hardware	13 33
30	J. I. Atchison	Plumbing	10 00
30	Joseph Jewett	Storing coal	4 90
30	H. Baumgarten & Bro	Stamp ribbons	6 12
Oct. 3	City post-office	Deficient postage	3 55
9	John F. Paret	Centograph	10 50
9	J. W. Boteler & Bro	Dusters, &c	58 68
18	A. McIntosh	Sweeping chimneys	12 80
30	Mantz & Co	Leather straps	10 00
31	Mary French	Washing towels	47 55
31	Barker Bros	Ice	31 71
31	John F. Paret	Call bell	2 50
Nov. 8	Washington Gas Company	Gas	10 80
12	M. G. Copeland & Co	Freight	14 40
12	Adams Express Company	....do	3 95
17	Francis B. Mohun	Stationery	328 60
25	Joseph Jewett	Storing coal	1 55
28	F. A. Conrad	Repairing chair	2 00
29	Mary French	Washing towels	45 10
Dec. 2	Charles F. Moore	Sponge, &c	6 85
4	F. Schneider & Son	Hardware	16 66
4	Barker Bros	Ice	29 40
5	H. Baumgarten & Bro	Stamp ribbons	7 12
5	H. Ellerbrook	Cleaning out cellar	12 50
8	Washington Gas Company	Gas	11 03
8	J. W. Boteler & Bro	Dusters, &c	29 50
9	Francis B. Mohun	Stationery	223 20
10	P. H. Weber	Car tickets	25 00
12	Thomas Broderick	Splicing hoisting rope	4 00
13	John Keyworth	Soap, matches	53 75
17	C. C. Wilson	Rubber stamp	2 00
17	F. Schneider & Son	Hardware	23 65
18	John C. Hesse	Removing furniture	4 00
19	W. S. Mitchell	Towels, &c	152 42
22	Joseph Jewett	Storing coal	2 00
29	Mantz & Co	File straps	15 75
31	Mary French	Washing towels	60 05
31	E. Morrison	Paper	13 60
31	Kennebec Ice Company	Ice	31 61
31	Francis Miller	Oil, &c	5 75
31	Washington Gas Company	Gas	18 45
31	City post-office	Deficient postage	4 74
31	G. W. Chamberlen	Glazing	18 00
1880.			
Jan. 5	James Anglim & Co	Book	1 00
7	H. Baumgarten & Bro	Stamp die	8 00
9	W. H. Boyd	Directories	50 00
10	B. W. Reed's Sons	Coaline	11 25

OFFICE OF THE ADJUTANT-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Jan. 13	D. Robinson	Removing snow	$2 45
15	W. N. Dalton	File laces	1 25
16	Francis B. Mohun	Stationery	395 38
16	W. S. Thompson	Rubber cushion	2 75
17	W. W. Farr	Repairing clock	2 50
19	Adams Express Company	Freight	90
19	Joseph Jewett	Storing coal	2 50
27	P. H. Weber	Car tickets	25 00
29	Joseph Jewett	Storing fuel	4 25
31	Mary French	Washing towels	48 10
31	Daniel Leonard	Mail boxes	10 00
31	E. Morrison	Card board	5 00
Feb. 3	Joseph Jewett	Removing snow	6 55
4	H. Semken	Clock	20 00
6	Barker Bros	Ice	31 59
7	Washington Gas Company	Gas	15 60
13	Adams Express Company	Freight	85
17	Francis B. Mohun	Stationery	484 75
21	Joseph Jewett	Removing snow	2 15
28	Mary French	Washing towels	49 65
28	Barker Bros	Ice	28 11
Mar. 5	John Keyworth	Soap, brooms	31 00
6	Washington Gas Company	Gas	12 60
6	J. J. Dermody	Book	3 00
11	Francis B. Mohun	Stationery	276 70
13	Joseph Jewett	Removing snow	3 55
22	J. W. Boteler & Bro	Dusters, &c	66 63
23	P. H. Weber	Car tickets	25 00
23	F. Lemmer	Repairing locks and keys	4 25
30	Daniel Robinson	Storing coal	2 70
31	Mary French	Washing towels	62 53
31	Barker Bros	Ice	30 07
31	Washington Gas Company	Gas	13 00
31	B. Baumgarten & Bro	Stamp ribbons	7 63
31	F. Schneider & Son	Hardware	13 05
31	City post-office	Deficient postage	4 43
Apr. 7	Adams Express Company	Freight	14 40
16	Francis B. Mohun	Stationery	443 95
30	Mary French	Washing towels	52 20
30	Barker Bros	Ice	30 54
May 6	Charles F. Moore	Sponges, &c	17 50
6	P. H. Weber	Car tickets	25 00
6	P. H. Weber	Car tickets	25 00
7	Francis B. Mohun	Stationery	246 65
7	Washington Gas Company	Gas	10 40
7	Adams Express Company	Freight	2 35
8	Francis Miller	Sperm oil	5 25
12	E. Morrison	Bristol boards	7 50
13	E. E. Jackson	Lumber	23 60
31	Mary French	Washing towels	65 07
31	Barker Bros	Ice	38 61
31	William S. Mitchell	Towels	25 46
31	Adams Express Company	Freight	8 20
June 4	M. G. Copeland & Co	Putting up awnings	24 00
5	Rufus Williams	Whitewashing	50 00
7	Washington Gas Company	Gas	6 40
8	John Keyworth	Soap	40 50
9	J. W. Boteler & Bro	Spittoons	15 93
10	E. Morrison	Paper	257 29
14	Francis B. Mohun	Stationery	371 80
29	G. W. Chamberlen	Glazing	75
29	William H. Dunn	Chairs	16 25
30	Mary French	Washing towels	55 88
30	F. Schneider & Son	Hardware	16 19
30	John C. Hesse	Scrubbing	110 00
30	J. W. Boteler & Son	Tumblers	2 40
30	H. Semken	Repairing clock	3 00
30	F. Schneider & Son	Hardware	27 49
30	Barker Bros	Ice	80 87
30	Norfleet & Co	Whip	2 00
30	Charles F. Moore	Sponge, &c	8 20
30	Washington Gas Company	Gas	5 20
30	City post-office	Deficient postage	4 40
30	Adams Express Company	Freight	10 30
30	Z. D. Gilman	Varnish, &c	4 10
30	....do	Turpentine, &c	1 65
30	Jacob Blatzheim	Repairing locks and keys	2 50
30	Francis B. Mohun	Stationery	315 10
30	Baltimore and Ohio Express Company.	Freight	60
30	John Keyworth	Soap	40 00

OFFICE OF THE ADJUTANT-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
June 30	William S. Mitchell	Towels	$26 00
30	W. H. & O. H. Morrison	Books	130 25
30	Francis B. Mohun	Stationery	24 43
30	John C. Hesse	Cleaning building	36 00
			8,000 00
	Amount appropriated		8,000 00
	Amount expended		8,000 00

OFFICE OF THE SURGEON-GENERAL.

1879.			
July 22	National Republican Company	Subscription	$6 00
26	T. A. Olliffe	Storing coal	28 50
31	Smith Thompson	File boxes	16 00
Aug. 7	Washington Gas Company	Gas	4 73
9	Thomas Payne	Sawing wood	24 25
14	Solomon Stover	Fuel	266 00
Sept. 6	Washington Gas Company	Gas	4 73
15	William Sauter	Repairing mail-wagon	12 00
30	Anthony Hyde, attorney	Rent	800 00
30	Washington Gas Company	Gas	5 63
30	Great Falls Ice Company	Ice	109 11
30	W. M. Galt & Co	Horse feed	31 29
30	E. F. Brooks	Repairing hydrant	7 00
30	J. K. Vernon	Carpentry	15 45
30	John F. Doran	Shoeing horses	7 88
30	F. Schneider & Son	Hardware	38 09
30	F. Lemmer	Repairing locks and keys	4 35
Oct. 7	John Wilson	Hektograph	10 00
13	City post-office	Deficient postage	1 60
18	M. W. Beveridge	Basin and pitcher	1 35
Nov. 6	Western Union Telegraph Company	Telegrams	4 50
7	G. W. Chamberlen	Glazing	2 50
8	Washington Gas Company	Gas	4 95
13	R. C. M. Burton	Taking down awnings	4 50
22	Atlantic and Pacific Telegraph Company.	Telegrams	1 36
24	Francis B. Mohun	Stationery	22 50
Dec. 3	Western Union Telegraph Company	Telegrams	11 58
3	Charles Harling	Car tickets	9 74
6	H. O. Towles	Table	8 00
8	Washington Gas Company	Gas	6 30
31	Anthony Hyde, attorney	Rent	800 00
31	Washington post-office	Deficient postage	3 08
31	Peter Vowel	Scrubbing	4 00
31	Western Union Telegraph Company.	Telegrams	2 08
31	Hooe, Bro. & Co	Linoleum, &c	30 75
31	John K. Vernon	Repairing furniture	75 95
31	E. F. Simpson	Repairing furnaces	150 50
31	Washington Gas Company	Gas	7 20
31	James H. Collins	Washing towels	50 00
31	W. W. Farr	Repairing clock	2 00
31	John F. Doran	Shoeing horses	6 50
31	G. W. Chamberlen	Glazing	17 00
31	M. W. Beveridge	Wash basin	60
31	Great Falls Ice Company	Ice	83 39
1880.			
Jan. 9	W. H. Boyd	Directories	60 00
12	F. Lemmer	Repairing locks, &c	6 55
13	W. M. Galt & Co	Horse feed	22 64
27	L. F. Clark & Sons	Window shades	6 46
29	Western Union Telegraph Company.	Telegrams	3 96
31	Charles Harling	Car tickets	10 00
Feb. 7	Washington Gas Company	Gas	7 00
18	W. B. Cox	Repairing chimneys and roof	50 00
24	E. F. Brooks	Gas fixtures	7 85
28	Western Union Telegraph Company.	Telegrams	2 89
Mar. 6	Washington Gas Company	Gas	5 80
10	Solomon Stover	Wood	24 00
22	E. E. Jackson & Co	Lumber	3 51
30	Lycett's Bindery	Order and circular binders	13 75
31	Anthony Hyde, attorney	Rent	800 00
31	Washington Gas Company	Gas	6 00
31	Western Union Telegraph Company	Telegrams	1 18
31	Peter Vowel	Cleaning windows	4 00
Apr. 8	W. M. Galt & Co	Horse feed	35 16

OFFICE OF THE SURGEON-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Apr. 9	Charles Harling	Car tickets	$10 00
9	City post office	Deficient postage	2 12
9	J. K. Vernon	Repairing furniture	23 50
10	Great Falls Ice Company	Ice	65 71
10	F. Schneider & Son	Hardware	42 00
10	G. W. Chamberlen	Glazing	4 50
10	John F. Doran	Shoeing horses	7 50
10	Hooe, Bro. & Co	Rug	10 00
29	R. C. M. Burton	Repairing awnings	78 30
30	Western Union Telegraph Company	Telegrams	7 57
May 7	Washington Gas Company	Gas	6 00
8	M. W. Beveridge	Cuspadores, &c	65 00
12	G. M. Wight	Furniture	754 00
12	....do	Book-case	78 00
15	L. F. Clark & Sons	Window shades	37 00
21	Peter Vowell	Whitewashing	70 00
31	Western Union Telegraph Company	Telegrams	8 24
31	Charles Harling	Car tickets	13 00
June 3	G. M. Wight	Furniture	181 00
7	Washington Gas Company	Gas	5 00
19	Thomas Larcombe	Adjusting printers' stone	10 00
19	Lycett's Bindery	Binding books	36 25
23	H. Baumgarten & Bro	Rubber stamp	2 50
25	John A. Baker	Lawn-mower	27 00
25	G. M. Wight	Looking-glass	9 00
26	William Sauter	Repairing mail-wagon	52 20
26	Edward J. Lewis	Ice pitcher and waiter	24 00
26	Peter Vowell	Scrubbing	20 00
26	Conrad Becker	Repairing harness	30 10
28	Henry Kimmel	Repairing pitcher	1 00
28	J. W. Boteler & Bro	Window shade	6 60
28	Hektograph Company	Hektograph	5 00
28	E. Morrison	Paper	50 00
29	E. G. Wheeler	Buckets, &c	9 00
29	H. O. Towles	Furniture	19 50
29	Maggie Collins	Washing towels	50 00
29	J. K. Vernon	Carpentry	94 30
29	G. W. Chamberlen	Glazing	1 00
30	R. C. M. Burton	Awnings	9 00
30	W. M. Galt & Co	Horse-feed	35 91
30	J. F. Doran	Shoeing horses	7 88
30	Anthony Hyde, attorney	Rent	800 00
30	Hooe, Bro. & Co	Carpets	446 62
30	F. Schneider & Son	Hardware	87 90
30	M. W. Beveridge	Cuspadores	42 05
30	Jacob Blatzheim	Repairing locks and keys	8 50
30	City post-office	Deficient postage	2 34
30	L. F. Clark & Sons	Window shades	8 25
30	John Wilson	Cadet registers	3 00
30	Charles Harling	Car tickets	20 28
30	H. O. Towles	Chair	7 50
30	Great Falls Ice Company	Ice	133 62
30	Western Union Telegraph Company.	Telegrams (May)	7 44
30	....do	Telegrams (June)	10 68
30	Washington Gas Company	Gas	3 80
30	W. S. Thompson	Soap	55 40
30	J. K. Vernon	Carpentry	40 00
30	Francis B. Mohun	Stationery	43 00
30	Harkness & Co	Globes	1 00
30	William M. Davis	Safety matches	36 25
			7, 500 00
	Amount appropriated		$6, 500 00
	Additional appropriation		1, 000 00
	Total		7, 500 00
	Amount expended		7, 500 00

OFFICE OF THE QUARTERMASTER-GENERAL.

1879.			
July 2	M. E. Mann	Cyclopædia	$6 00
3	American News Company	Historical Register	2 50
3	T. H. S. Hamersly	Books	13 50
3	Washington and Georgetown Railroad Company.	Tickets	10 00
11	E. W. Woodruff	File holders	12 00

OFFICE OF THE QUARTERMASTER-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1879.			
July 12	E. Steiger	Books	$15 60
12	Franklin Institute	Subscription to Journal	5 00
12	Charles D. Lakey	Subscription to American Builder	1 50
12	Munn & Co	Subscription to Scientific American	7 00
12	John H. Schultz	Subscription to American Railroad Journal	5 00
12	B. Westermann & Co	Subscription to magazines	47 60
12	New York Tribune	Subscription	10 00
14	Houghton, Osgood & Co	Subscription to American Architect	6 00
15	W. C. & F. P. Church	Subscription to Army and Navy Journal	6 00
17	David Williams	Subscription to magazines	5 70
19	William W. Farr	Repairing clocks	5 00
19	S. J. Haislett	Awnings	20 05
19	J. William Jones	Subscription to historical papers	3 00
21	Tenney & Reese	Dating s amp	10 00
23	M. W. Beveridge	Pen vases	6 25
23	Lemuel J. Denham	Sponge	2 00
25	Commissioner of Patents	Subscription to Gazette	6 00
28	Luttrell & Wine	Towels	18 00
28	William Minster	File box	3 00
29	S. J. Haislett	Awnings	36 00
31	Gold and Stock Telephone Company.	Rent of instrument	25 00
Aug. 1	J. W. Boteler & Bro	Dusters, &c	41 25
2	Francis B. Mohun	Stationery	599 45
2	Catharine Graham	Washing towels	20 00
2	Isabella Mackin	Scrubbing	11 25
2	Lena Boll	....do	6 00
2	James Fitzpatrick	Plastering	27 50
2	W. E. Spalding & Co	Staining room	12 75
6	John H. Magruder	Brooms	15 85
6	Lena Boll	Scrubbing	4 50
8	W. Y. McAllister	Binocular	9 00
8	Franklin & Co	Thermometers	1 50
9	George A. Washington	Whitewashing	12 00
11	C. Becker	Hoof ointment	1 00
11	Lena Boll	Recaning chairs	3 00
14	James W. Queen & Co	Drawing instruments	9 00
15	Washington Post	Subscription	3 00
19	William Minster	Book rack	6 50
21	Tenney & Reese	Dating stamp	9 00
28	William Minster	Step ladder and screen	11 00
Sept. 3	Isabella Mackin	Scrubbing	12 00
4	C. Tiers Myers & Co	Detergent	13 60
5	Munn & Co	Subscription to Scientific American	98
6	Catharine Graham	Washing towels	20 00
6	E. W. Woodruff	File boards	15 00
8	Francis B. Mohun	Stationery	291 62
9	Walton Bros	Radiators	68 00
10	American News Company	Historical Register	1 00
10	William E. Spalding & Co	Painting, &c	48 80
12	C. C. Wilson	Dating-stamp	20 00
18	L. S. Davis	Labor	15 75
20	Lena Boll	Scrubbing	10 50
20	Cameron, Amberg & Co	Furniture	36 40
26	William Minster	Walnut screen	6 50
27	Washington and Georgetown Railroad Company.	Tickets	10 00
27	James Fitzpatrick	Lining furnaces	32 00
27	Lorenzo Rice	Cleaning carpet	50 76
27	Charles F. Williams	Washing windows	3 00
30	Francis B. Mohun	Stationery	309 25
30	Catharine Graham	Washing towels	20 00
30	Isabella Mackin	Scrubbing	10 12
30	Quinter Bros	Plumbing	24 04
30	E. F. Brooks	.. do	95 59
30	James W. Queen & Co	Tracing paper	4 00
30	B. Westermann & Co	Books	25 93
30	Lemuel J. Denham	Sponge	2 00
30	B. W. Reed's Sons	Soap	6 30
30	George B. Chittenden	Hektograph	6 00
Oct. 3	Barker Bros	Ice	53 56
7	J. T. Bivins	Repairing type-writer	5 50
9	C. C. Wilson	Rotary stamp	16 50
11	Thomas Stephenson	Washing windows	12 00
14	W. B. Moses	Furniture	176 25
14	John Banks	Cleaning smoke-stack	5 00
16	Robert Leitch & Sons	Repairing gauge	4 40
20	F. Burlingame	Subscription to Sunday Herald	2 50
21	W. E. Spalding & Co	Glazing	34 25
24	Baker, Pratt & Co	Revolving book cases	27 92
31	Catharine Graham	Washing towels	20 00

OFFICE OF THE QUARTERMASTER-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1879.			
Oct. 31	H. Blau	Laying carpets	$56 00
31	Thomas Stevenson	Scrubbing	3 75
31	James J. Chapman	Letter case	3 00
Nov. 3	A. M. Tanner	Refilling hektograph	3 00
6	Isabella Mackin	Scrubbing	7 50
8	Francis B. Mohun	Stationery	386 75
8	W. M. Davis	Dusters	22 50
8	E. W. Woodruff	File-holders	12 00
12	Franklin & Co	Thermometers	2 00
12	J. W. Sheckells	Repairing locks and keys	1 95
12	Conrad Becker	Mail-bag	8 85
13	W. D. Wyvill	Hektograph materials	8 00
15	S. J. Haislett	Taking down awnings	13 70
15	James Fitzpatrick	Lining furnace	8 00
17	E. W. Woodruff	File-holders	28 50
18	Washington and Georgetown Railroad Company	Tickets	10 00
18	Julius Ulke	Painting of General Thomas	12 00
25	James Hudson & Co	Painting	5 00
25	Tanner & Chittenden	Hektograph materials	13 30
29	J. S. Conover & Co	Grate bottom	3 00
29	E. F. Brooks	Plumbing	10 46
29	Henry Van Zuilen	Binders for record	7 50
29	James Temple Brown	Type-writer	126 00
Dec. 1	Catharine Graham	Washing towels	20 00
3	Isabella Mackin	Scrubbing	8 62
4	William S. Mitchell	Carpets, &c	252 57
4	Joseph J. Walton	Sapolio	8 00
6	George A. Washington	Whitewashing	8 00
9	Francis B. Mohun	Stationery	165 85
9	Quinter Bros	Plumbing	5 15
17	James Hudson & Co	Office sign	3 00
18	B. Westermann & Co	Magazines	100 21
18	C. C. Wilson	Rotary stamp	25 00
18	H. N. Barlow	Walnut frame	10 00
27	Michael Delahanty	Scrubbing	33 00
30	Isabella Mackin	....do	6 00
30	H. Blau	Laying matting	8 75
31	Catharine Graham	Washing towels	20 00
31	Kennebec Ice Company	Ice	34 60
31	J. W. Boteler & Bro	Umbrella stands	29 28
31	F. W. Sanborn	Wrench	5 00
31	Quinter Bros	Plumbing	10 12
31	M. W. Beveridge	Glass shade, &c	5 50
31	B. W. Reed's Sons	Dust brushes	7 75
31	W. S. Thompson	Soap	10 50
31	D. Van Nostrand	Books	1 72
31	Francis B. Mohun	Stationery	396 10
1880.			
Jan. 5	C. C. Wilson	Rotary stamp	12 00
7	Fred. W. Pratt	Maps	12 00
9	W. H. Boyd	Directories	20 00
14	W. B. Moses	Furniture	226 18
14	W. H. & O. H. Morrison	Books	12 00
15	Luttrell & Wine	Towels	30 00
17	M. E. Mann	Book	5 00
19	Washington Post	Subscription	3 00
19	W. S. Mitchell	Matting	195 31
20	L. H. Schneider & Co	Hardware	49 77
21	Washington and Georgetown Railroad Company	Tickets	10 00
23	J. Karr	Repairing chronometer	20 00
27	Franklin & Co	Thermometer	2 50
31	D. J. Macarty	Pigeon-hole case	61 50
31	Thomas Stevenson	Washing windows	12 75
31	Michael Delanthy	Cleaning basement	4 50
31	Catharine Graham	Washing towels	20 00
31	Isabella Mackin	Scrubbing	9 00
31	John McClelland	Copying press castings	143 50
Feb. 6	E. W. Woodruff	File-holders	61 60
10	John H. Magruder	Chamois skins	2 30
10	A. M. Tanner	Refilling hektograph	4 50
13	L. J. Denham	Chamois skins	1 80
16	Francis B. Mohun	Stationery	377 80
19	C. C. Wilson	Rotary stamp	10 00
20	E. F. Brooks	Plumbing	21 62
20	L. S. Davis	Repairing steam-pipe	1 50
26	Joseph J. Walton	Sapolio	8 00
28	Catharine Graham	Washing towels	20 00
28	Isabella Mackin	Scrubbing	6 37

OFFICE OF THE QUARTERMASTER-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Feb. 28	Michael Delanthy	Cleaning out basement	$30 00
28	L. R. Hamersly & Co	Subscription to United Service	2 50
Mar. 8	George C. Maynard	Repairing electric bells	57 20
16	Francis B. Mohun	Stationery	342 70
26	F. C. Adams	Books	7 80
26	C. T. Smith	Putting up bookcase	3 00
27	John C. Hogan	Awnings	231 00
27	Lena Boll	Scrubbing	7 50
29	B. Westermann & Co	Books	72 01
31	Barker Bros	Ice	34 60
31	Isabella Mackin	Scrubbing	8 25
31	Catharine Graham	Washing towels	20 00
31	C. C. Wilson	Dating stamp	8 00
Apr. 6	Lena Boll	Scrubbing	9 00
8	Conrad Becker	Mail-bag	7 60
8	Supervisor New York City Record	Subscription	9 30
8	Washington and Georgetown Railroad Company.	Tickets	10 00
9	James Temple Brown	Type-writer ribbons	3 00
9	W. E. Spalding & Co	Glazing	5 95
13	Francis B. Mohun	Stationery	324 70
22	Franklin & Co	Thermometers	2 00
23	B. Westermann & Co	Subscription to Journal	7 50
23	W. C. Milburn	Repairing hektograph pad	6 00
23	Cameron, Amberg & Co	Cabinet indexes	2 80
26	H. Richey	Repairing cooler stand	2 50
30	D. Appleton & Co	Books	15 00
30	Catharine Graham	Washing towels	20 00
30	Isabella Mackin	Scrubbing	8 25
May 8	Thomas Stevenson	Whitewashing	15 75
8	James Fitzpatrick	Carpentry	35 00
11	Plumber and sanitary engineer	Subscription	1 00
13	William S. Mitchell	Matting	129 63
14	Francis B. Mohun	Stationery	376 61
21	Lena Boll	Scrubbing	13 50
28	Washington and Georgetown Railroad Company.	Tickets	5 00
31	H. I. Hart	Insect powder	6 00
31	Isabella Mackin	Scrubbing	9 75
31	Catharine Graham	Washing towels	20 00
June 4	W. E. Spalding & Co	Glazing	3 75
14	J. W. Sheckells	Repairing lock and key	1 00
14	J. W. Boteler & Bro	Buckets	8 75
15	George C. Maynard	Repairing electric bells	18 15
15	Francis B. Mohun	Stationery	44 10
16	G. O. Freeman & Co	Ink extractor	3 50
16	A. S. Barnes & Co	Magazines	1 00
16	B. Westermann & Co	Books	15 56
16	D. Van Nostrand	Magazines	1 72
16	L. H. Schneider & Co	Hardware	21 58
16	B. W. Reed's Sons	Brooms, soap	17 15
16	W. S. Thompson	Camphor	7 85
30	Catharine Graham	Washing towels	20 00
30	Isabella Mackin	Scrubbing	8 62
30	Barker Bros	Ice	44 99
30	Francis B. Mohun	Stationery	11 63
			8, 000 00
	Amount appropriated		8, 000 00
	Amount expended		8, 000 00

OFFICE OF THE PAYMASTER-GENERAL.

1879.			
July 19	W. C. & F. P. Church	Subscription to Army and Navy Journal	$6 00
22	W. H. Nalley	Pamphlet binders	3 50
Aug. 2	Charles H. Earl	Livery of horses	50 00
7	C. C. Wilson	Dating stamp	13 00
16	Daniel Shannon	Car tickets	5 00
Sept. 2	Charles H. Earl	Livery of horses	50 00
4	Western Union Telegraph Company.	Telegrams	30 93
12	H. L. Pelouze & Son	Printing materials	59 05
13	Francis B. Mohun	Stationery	19 97
30	Mary A. Loveless	Washing towels	25 00
30	Francis B. Mohun	Stationery	12 25
30	Western Union Telegraph Company	Telegrams	4 50
Oct. 3	L. R. Hamersly & Co	Subscription to United States Service	5 00

OFFICE OF THE PAYMASTER-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1879.			
Oct. 4	Charles H. Earl	Livery of horses	$50 00
9	John F. Paret	Centograph	8 50
10	W. W. Cox	Paper fasteners and punch	8 00
21	W. H. Nalley	Binders	5 00
27	John McDermott & Bros	Repairing office wagon	63 00
Nov. 1	Charles H. Earl	Livery of horses	50 00
6	Western Union Telegraph Company.	Telegrams	15 96
12	Andrew J. Joyce	Repairing wagon	7 85
Dec. 2	Charles H. Earl	Livery of horses	50 00
3	Western Union Telegraph Company.	Telegrams	8 01
6	Mantz & Co	Repairing harness	38 75
9	Army and Navy Journal	Subscription	6 00
11	H. L. Pelouze & Son	Printing materials	22 30
19	Francis B. Mohun	Stationery	36 50
19	H. Fowkes	Book	6 00
31	Charles H. Earl	Livery of horses	50 00
31	Mary A. Loveless	Washing towels	25 00
31	Western Union Telegraph Company.	Telegrams	8 99
31	William H. Boyd	Directories	15 00
			19 75
1880.			
Jan. 8	Mantz & Co	Horse blankets	5 22
14	Atlantic and Pacific Telegraph Co.	Telegrams	
19	L. R. Hamersly & Co	Book	1 00
20	Francis B. Mohun	Stationery	74 10
29	Western Union Telegraph Company	Telegrams	26 56
29	John Lockie	Subscription to Directory	5 00
31	William H. Nalley	Binding materials	28 00
Feb. 6	....do	Book covers	8 00
7	Charles H. Earl	Livery of horses	41 00
11	New York Evening Post	Subscription	9 00
13	Daniel Shannon	Car tickets	5 00
28	Western Union Telegraph Company.	Telegrams	23 46
28	J. Anglim & Co	Book	1 00
Mar. 2	C. H. Earl	Livery of horses	37 00
5	W. H. Nalley	Repairing books	23 00
12	Atlantic and Pacific Telegraph Company.	Telegrams	3 29
13	W. H. Nalley	Repairing books	27 50
31	Mary A. Loveless	Washing towels	25 00
31	B. Westermann & Co	Express charges	57
31	Western Union Telegraph Company.	Telegrams	13 87
31	Charles H. Earl	Livery of horses	50 00
31	John McDermott & Bros	Repairing wagon	9 25
Apr. 21	Jos. S. Ball	Repairing hektograph	1 25
22	L. R. Hamersly & Co	Magazine	10 00
30	Western Union Telegraph Company.	Telegrams	16 29
30	John McDermott & Bros	Repairing wagon	18 60
May 4	Charles H. Earl	Livery of horses	50 00
25	Francis B. Mohun	Stationery	85 85
31	Western Union Telegraph Company.	Telegrams	18 04
June 5	Charles H. Earl	Livery of horses	50 00
15	Francis B. Mohun	Stationery	113 15
16	H. L. Pelouze & Son	Printers' materials	189 56
19	Mantz & Co	Repairing harness	11 00
25	Post-Office Department	Mounting maps	30 00
30	Mary A. Loveless	Washing towels	25 00
30	Charles H. Earl	Livery of horses	50 00
30	John McDermott & Bros	Repairing carriage	3 25
30	W. H. Nalley	Binders	5 00
30	Western Union Telegraph Company.	Telegrams	11 84
30	Atlantic and Pacific Telegraph Company.	....do	3 85
30	George Cartner	Book	6 00
30	Western Union Telegraph Company.	Telegrams	12 51
30	Francis B. Mohun	Stationery	446 00
			2,352 82
	Amount appropriated		2,500 00
	Amount expended		2,352 82
	Balance in the Treasury		147 18

OFFICE OF THE COMMISSARY-GENERAL.

1879.			
July 17	Hooe, Bro. & Co	Carpets	$261 23
21	Smith & Co	Furniture	128 00
29	L. R. Hamersly & Co	Subscription to United Service	2 50

OFFICE OF THE COMMISSARY-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1879.			
Aug. 2	Jane E. Strother	Washing towels	$4 50
6	Francis D. Lewis, attorney	Rent	208 30
7	Washington Gas Company	Gas	3 83
9	James Fitzpatrick	Plastering	4 00
19	Francis B. Mohun	Stationery	27 75
21	C. C. Wilson	Dating-stamps	72 00
30	Francis D. Lewis, attorney	Rent	208 34
30	Jane E. Strother	Washing towels	4 00
Sept. 4	American District Telegraph Company.	Rent of instrument	3 50
6	Washington Gas Company	Gas	3 83
8	W. H. & O. H. Morrison	Books	20 50
8	H. Baumgarten & Bro	Dating-stamps	7 00
15	Fred. A. Fill	Book	1 00
15	D. Van Nostrand	do	1 75
22	Francis B. Mohun	Stationery	109 50
24	John Simmons	Horse	175 00
27	William McLean	Lumber	21 31
27	McDonald & Davidson	Repairing wagon	225 00
30	F. D. Lewis, attorney	Rent	208 32
30	Washington Gas Company	Gas	3 83
30	Great Falls Ice Company	Ice	16 11
30	Collins, Ward & Cunningham	Repairing stoves	55 00
30	L. Martin & Butler	Varnish	3 29
30	Jane E. Strother	Washing towels	4 00
30	Jesse F. Mann	Subscription to Post	1 50
30	W. W. Cox	Paper fasteners and press	12 50
30	E. F. Brooks	Drop-light	9 75
30	F. A. Fill & Co	Subscription to New York Times	3 75
30	L. H. Schneider & Co	Hardware	9 77
30	Francis B. Mohun	Stationery	37 00
Oct. 11	W. H. & O. H. Morrison	Books	5 00
18	H. D. Dickey, agent	Book	8 00
27	The Graphic Company	Subscription	12 00
31	F. D. Lewis, attorney	Rent	208 34
31	Jane E. Strother	Washing towels	4 00
Nov. 4	American District Telegraph Company.	Rent of instrument	3 50
8	Washington Gas Company	Gas	6 30
15	Francis B. Mohun	Stationery	213 25
18	W. C. & F. P. Church	Binder for journal	1 50
20	do	Subscription to Army and Navy Journal	7 65
28	I. T. Walker Sons	Roofing shed	7 00
29	Jane E. Strother	Washing towels	4 00
Dec. 2	F. D. Lewis, attorney	Rent	208 32
4	S. C. Swett	Lamp	1 50
5	W. H. & O. H. Morrison	Books	18 00
8	Washington Gas Company	Gas	5 85
8	L. R. Hamersly & Co	Subscription to United Service	3 75
8	G. L. Simpson, agent	Freight	2 28
9	Readers and Writers' Economy Company.	Book-cases	37 00
11	American Grocer Publishing Company.	Subscriptions	3 00
29	S. J. Spearing	Plumbing	1 50
31	F. D. Lewis, attorney	Rent	208 34
31	Jane E. Strother	Washing towels	4 00
31	James L. Harmon	Subscription to Baltimore Sun	3 30
31	F. A. Fill	Subscription to New York Times	3 75
31	American District Telegraph Company.	Rent of instrument	3 50
31	J. Fallon, agent	Subscription to Republican	3 00
31	G. M. Wight	Office chairs	33 34
31	William McLean	Lumber	47 81
31	Great Falls Ice Company	Ice	14 42
31	Washington Gas Company	Gas	5 40
31	Jesse F. Mann	Subscription to Post	1 50
31	L. H. Schneider & Co	Hardware	37 05
1880.			
Jan. 9	W. H. Boyd	Directory	5 00
10	Mantz & Co	Repairing harness	7 00
13	W. H. Dunn	Repairing chair	42 00
20	D. Van Ness Person	Subscription to Produce Exchange Bulletin	4 00
21	Francis B. Mohun	Stationery	40 25
22	George Watts & Co	Basket	1 50
23	John A. Baker	Grass seed	2 73
26	William Miller	Medallion	5 00
28	L. Martin & Butler	Varnish	15 14
30	Capt. W. H. Bell, commissary of subsistence.	Soap	7 05
30	Trask & Co	Furnace governor	25 00

OFFICE OF THE COMMISSARY-GENERAL—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Jan. 31	Jane E. Strother	Washing towels	$4 00
31	James E. Miller	Wood and coal	19 25
31	Francis D. Lewis, attorney	Rent	208 34
31	George C. Maynard	Electric pen zincs	50
Feb. 7	Washington Gas Company	Gas	5 80
17	Francis B. Mohun	Stationery	65 00
28	Francis D. Lewis, attorney	Rent	208 32
28	Jane E. Strother	Washing towels	4 00
Mar. 6	Washington Gas Company	Gas	7 00
6	American District Telegraph Co	Rent of instrument	3 80
13	H. Baumgarten & Bro	Dating stamp	7 00
18	Capt. W. H. Bell, commissary of subsistence.	Safety matches	5 28
22	John Danner	Revolving book-cases	42 70
25	American News Company	Book	8 00
31	F. D. Lewis, attorney	Rent	208 34
31	Collins, Ward & Cunningham	Cleaning stove	3 00
31	J. F. Mann	Subscription to Post	1 50
31	L. H. Schneider & Co	Hardware	19 30
31	James E. Miller	Wood and coal	12 89
31	Jane E. Strother	Washing towels	4 00
31	Murray & Barker	Shoeing horses	11 00
31	Mantz & Co	Repairing harness	14 00
31	McDonald & Davidson	Repairing wagon	10 75
31	William McLean	Lumber	7 64
31	Washington Gas Company	Gas	6 60
Apr. 7	Great Falls Ice Company	Ice	9 66
9	Fred. A. Fill	Subscription to New York Times	3 75
14	H. Baumgarten & Bro	Ink	50
16	F. B. Mohun	Stationery	27 00
17	E. Caverly & Co	Plumbing	22 00
21	S. F. Taylor, agent	Books	3 00
22	L. R. Hamersly & Co	Magazine	10 00
22	Martin & Butler	Sponge	4 55
29	R. C. M. Burton	Repairing awnings	10 00
30	F. D. Lewis, attorney	Rent	182 33
30	Jane E. Strother	Washing towels	4 00
30	American District Telegraph Co	Rent of instrument	3 50
May. 7	Washington Gas Company	Gas	5 20
13	R. C. M. Burton	Awnings	14 00
13	Capt. W. H. Bell, commissary of subsistence.	Soap	1 71
22	R. C. M. Burton	Awnings	9 00
25	Francis B. Mohun	Stationery	60 25
28	Lysander Cooper	Whitewashing	30 00
31	Jane E. Strother	Washing towels	4 00
31	Thomas H. Lawrence, agent	Book	4 00
31	George Watts	Dusters, &c	28 36
31	F. D. Lewis, attorney	Rent	208 34
31	Readers and Writers Economy Company.	Catalogue cards	3 70
June. 5	M. E. Mann	Book	6 00
5	J. H. Hodgkins	Painting shutters	43 17
7	Washington Gas Company	Gas	3 60
17	G. O. Freeman & Co	Ink extractor	6 50
29	J. B. Kendall	Repairing mail-wagon	67 16
29	Richard Henderson	Window shades	11 63
29	Martin & Butler	Sponge	16 03
29	Mantz & Co	Repairing harness	24 50
29	L. H. Schneider & Co	Hardware	5 58
29	William McLean	Lumber	5 21
29	Murray & Barker	Shoeing horses	8 00
29	J. F. Allen	Subscription to Republican	3 00
29	F. D. Lewis, agent	Rent	208 33
29	Great Falls Ice Company	Ice	19 15
29	Washington Gas Company	Gas	2 40
29	Jane E. Strother	Washing towels	4 00
29	Jesse F. Mann	Subscription to Post	1 50
29	James L. Harmon	Subscription to Baltimore Sun	3 30
29	American District Telegraph Co	Rent of instrument	4 10
29	Fred. A. Fill	Subscription to New York Times	3 75
29	Edward Caverly & Co	Plumbing	2 90
29	Collins, Ward & Cunningham	Water-spout	3 00
29	Francis B. Mohun	Stationery	135 51
29	Hooe, Bro. & Co	Carpet, &c	205 30
			5,500 00
	Amount appropriated		5,500 00
	Amount expended		5,500 00

OFFICE OF THE CHIEF OF ENGINEERS.

Date.	To whom paid.	On what account.	Amount.
1879.			
July. 19	Army and Navy Journal	Subscription	$6 00
31	Elizabeth Denham	Washing towels	5 00
31	Daniel Ford	Policing rooms	10 00
31	M. M. Magruder	Map frames	4 50
Aug. 2	Francis B. Mohun	Stationery	238 05
2	..... do	Book	8 00
2	A. R. Lycett	Portfolio	9 00
16	B. Westermann & Co	Atlas	2 21
18	Otto Heidemann	Wood cut	6 00
19	John E. Kendall & Son	Window screens	18 00
25	E. W. Woodruff	File-holders	40 00
25	R. H. Boswell & Co	Furniture	16 00
29	Henry C. Thorn	Repairing gas fixtures	10 00
30	Elizabeth Denham	Washing towels	5 00
30	Adolphus Adams	Policing rooms	10 00
30	W. H. & O. H. Morrison	Books	8 38
30	C. A. Schneider & Sons	Repairing presses	4 00
Sept. 1	Wheatley Bros	Lumber	40 56
2	William Hounschild	Paste	3 75
13	Francis B. Mohun	Stationery	130 02
13	.....do	Book	2 00
15	Charles Fischer	Sharpening paper cutter	3 00
18	F. W. Christern	Books	4 40
20	E. W. Woodruff	File-holders	20 00
30	Robert Sillers	Office expenses	27 74
30	Elizabeth Denham	Washing towels	5 00
30	Ruth A. Thompson	.....do	15 00
30	Adolphus Adams	Policing rooms	10 00
30	Barker Bros	Ice	21 70
30	F. Lemmer	Locks and keys	2 50
30	R. H. Boswell & Co	Upholstery	9 85
30	F. Schneider & Son	Hardware	9 17
30	Francis B. Mohun	Stationery	40 65
30	.....do	Books	6 00
30	William Hounschild	Paste	1 50
30	Schuyler, Hartley & Graham	Subscription to Field Glass	1 00
30	William Walter	Repairing furniture	28 05
30	W. W. Burdette & Co	Bleached cotton	10 69
30	H. L. Pelouze & Son	Printing material	6 92
30	Carl Petersen	Clocks and repairs	8 35
Oct. 15	E. W. & G. C. Thomas, jr	Map rollers	7 00
30	W. H. & O. H. Morrison	Books	21 68
31	Elizabeth Denham	Washing towels	5 00
31	Adolphus Adams	Policing rooms	10 00
31	Maurice Joyce	Engraving	3 00
Nov. 1	George A. Foxcroft, agent	Map rolls	67 00
8	Baldwin Bros	Map scrolls and rollers	6 00
14	J. F. Mann	Subscription to Post	3 00
15	James P. McGrann	Laying carpets	27 00
17	Francis B. Mohun	Stationery	46 00
17	.....do	Books	1 25
18	Lorenzo Rice	Cleaning carpets	25 32
24	Wheatley Bros	Lumber	22 50
29	Elizabeth Denham	Washing towels	5 00
Dec. 1	Adolphus Adams	Policing rooms	10 00
6	George Jones	Washing windows	11 00
9	Lenox Smith	Subscription to Engineering	10 00
11	George A. Foxcroft	Map-rolls	10 50
13	Edward Caverly & Co	Drop-light	6 00
16	E. W. Woodruff	File-holders	10 00
19	Francis B. Mohun	Stationery	14 65
19	.....do	Books	10 00
19	William S. Mitchell	Carpets	164 70
23	Macmillan & Co	Subscription to Nature	6 00
27	William Walter	Repairing file cases	4 00
31	Adolphus Adams	Policing rooms	10 00
31	Elizabeth Denham	Washing towels	5 00
31	Ruth A. Thompson	.....do	15 00
31	Robert Sillers	Office expenses	18 72
31	F. Schneider & Son	Hardware	14 96
31	Barker Bros	Ice	18 48
31	William Hounschild	Paste	5 25
31	John H. Magruder	Brooms, &c	6 90
31	James L. Harmon	Subscription to Baltimore Sun	3 30
1880.			
Jan. 12	H. N. & Arthur Stafford	Dating-stamp	90 00
13	W. H. Boyd	Directories	30 00
14	R. H. Boswell & Co	Window shades	54 00
14	Munn & Co	Subscription to Scientific American	7 00
15	L. R. Hamersly & Co	Book	1 00

OFFICE OF THE CHIEF OF ENGINEERS—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
Jan. 15	B. Westermann & Co	Atlas	$1 64
19	Baldwin Bros	Map-rollers	4 50
26	H. Baumgarten & Bro	Repairing stamps	10 00
26	George H. Frost	Subscription to Engineering News	3 00
31	Elizabeth Denham	Washing towels	5 00
31	Adolphus Adams	Policing rooms	10 00
31	Magruder & Lange	Altering book-cases	5 25
31	Francis B. Mohun	Stationery	10 30
31	....do	Books	3 50
Feb. 16	Houghton, Osgood & Co	Postal Guides	11 55
18	Francis B. Mohun	Stationery	68 10
25	H. L. Pelouze & Son	Roller composition	6 00
28	Elizabeth Denham	Washing towels	5 00
28	Adolphus Adams	Policing rooms	10 00
Mar. 4	Franklin Institute	Subscription to Journal	5 00
17	Francis B. Mohun	Stationery	113 92
30	William Walter	Desk drawer and locks	7 00
31	Elizabeth Denham	Washing towels	5 00
31	Adolphus Adams	Policing rooms	10 00
31	Robert Sillers	Office expenses	26 77
31	F. Schneider & Son	Hardware	6 68
31	William Hounschild	Paste	4 50
31	Hartley & Graham	Subscription to Field Glass	1 00
31	B. Westermann & Co	Atlas	83
31	M. W. Beveridge	Cuspidores	5 35
31	George Ryneal, jr	Glue, glycerine	10 10
31	..... do	Glass	3 50
31	Barker Bros	Ice	18 24
31	W. W. Burdette & Co	Towels	9 00
31	R. H. Boswell	Chair cushion	3 75
31	James Anglim	Book	3 00
31	Ruth A. Thompson	Washing towels	15 00
31	John H. Magruder	Soap	15 95
Apr. 30	Adolphus Adams	Policing rooms	10 00
30	Elizabeth Denham	Washing towels	5 00
May 4	J. F. Mann	Subscription to Post	3 00
15	R. H. Davis	Repairing chair	3 00
25	Francis B. Mohun	Stationery	32 72
31	Adolphus Adams	Policing rooms	10 00
31	Elizabeth Denham	Washing towels	5 00
31	William Price	Taking up carpets	20 00
June 15	F. B. Mohun	Stationery	68 10
21	R. H. Davis	Repairing chairs	20 50
22	Frank Linkins	Moving books	4 10
22	Frederick Martin	....do	4 10
26	H. Baumgarten & Bro	Rubber stamps	9 00
30	Elizabeth Denham	Washing towels	5 00
30	Ruth A. Thompson	..... do	15 00
30	J. L. Harmon	Subscription to Baltimore Sun	3 30
30	Charles H. Trunnel	Laying floor	32 22
30	Adolphus Adams	Policing rooms	10 00
30	Maurice Joyce	Electrotypes	3 20
30	F. Schneider & Son	Hardware	4 80
30	W. W. Burdette & Co	Bleached cotton	5 85
30	George Hill, jr	Paper-wrappers	16 66
30	Barker Bros	Ice	18 48
30	William S. Mitchell	Oil-cloth	9 47
30	John H. Magruder	Soap	7 08
30	F. W. Christern	Books	6 20
30	Baldwin Bros	Map-rollers	12 00
30	George Ryneal, jr	Glue, glycerine	11 60
30	M. W. Beveridge	Glassware	3 10
30	Carl Petersen	Clock	4 50
30	Western Union Telegraph Company	Telegrams	17 30
30	Robert Sillers	Office expenses	32 98
30	Public Printer	Congressional Records	7 52
30	William Hounschild	Paste	3 75
30	George M. Schaefer	....do	2 00
30	Adams Express Company	Freight	1 50
30	Magruder & Lange	Book-case	50 00
30	Francis B. Mohun	Stationery	9 34
			2, 500 00
	Amount appropriated		2, 500 00
	Amount expended		2, 500 00

OFFICE OF THE CHIEF OF ORDNANCE.

Date.	To whom paid.	On what account.	Amount.
1879.			
July 17	James Miller	Books	$24 00
19	W. C. & F. P. Church	Subscription to Journal	12 00
Aug. 19	J. B. Lippincott & Co	Books	100 00
28	Journal of Commerce	Subscription	1 71
Sept. 4	T. H. S. Hamersly	Navy Registers	10 00
5	D. Van Nostrand	Engineering Magazine	4 50
6	T. H. S. Hamersly	Navy Registers	8 00
8	Littell & Co	Living Age	54
13	Francis B. Mohun	Stationery	152 40
29	William Callow	Subscription to New York Times	37 20
30	John M. Smith	Washing towels	18 00
Oct. 7	Kennebec Ice Company	Ice	13 05
17	American News Company	Books	8 00
Nov. 24	Francis B. Mohun	Stationery	120 75
Dec. 8	F. H. Turner	Atlas	25 00
12	L. R. Hamersly & Co	Subscription to United Service	3 75
18	E. B. Sargent	Book	2 00
31	John M. Smith	Washing towels	18 00
31	Kennebec Ice Company	Ice	8 20
1880.			
Jan. 9	W. H. Boyd	Directories	5 00
15	T. H. S. Hamersly	Book	6 00
17	James Miller	ditto	5 16
29	T. H. S. Hamersly	ditto	5 00
31	Francis B. Mohun	Stationery	228 65
Feb. 27	William S. Mitchell	Laying carpets	30 61
Mar. 24	H. D. Dickey, agent	Book	8 00
26	D. Van Nostrand	Books	50 00
31	John M. Smith	Washing towels	18 00
31	Kennebec Ice Company	Ice	7 77
Apr. 27	D. Van Nostrand	Book	11 60
May 25	Francis B. Mohun	Stationery	29 11
25	D. Van Nostrand	Magazine	5 00
31	John Lockie	Subscription to Office Directory	5 00
June 30	John M. Smith	Washing towels	18 00
			1, 000 00
	Amount appropriated		1, 000 00
	Amount expended		1, 000 00

OFFICE OF MILITARY JUSTICE.

1879.			
July 25	G. N. Rider	Book	$8 00
Aug. 4	John Tennyson	Washing towels	7 50
25	Francis B. Mohun	Stationery	93 25
27	W. C. & F. P. Church	Subscription to Army and Navy Journal	1 45
27	A. C. McLean	Repairing furniture	2 00
Sept. 19	L. R. Hamersly & Co	Subscription to Magazine	5 00
26	John Tennyson	Washing towels	2 25
30	Thomas Washington	Laying carpets	2 00
30	Robert Clarke & Co	Books	6 00
Oct. 13	Barker Bros	Ice	8 58
31	T. H. S. Hamersly	Books	10 00
Nov. 25	Army and Navy Journal	Subscription	6 00
26	William Noell	Repairing blinds	7 00
Dec. 20	John Tennyson	Washing towels	4 75
1880.			
Jan. 9	W. H. Boyd	Directory	5 00
17	Barker Bros	Ice	7 29
Feb. 25	Army and Navy Register	Subscription	1 00
28	John Tennyson	Washing towels	3 50
Apr. 7	Barker Bros	Ice	7 30
27	Francis B. Mohun	Stationery	35 32
28	W. H. & O. H. Morrison	Book	6 00
June 18	John Tennyson	Washing towels	6 25
30	Kennebec Ice Company	Ice	7 39
30	Francis B. Mohun	Stationery	7 17
			250 00
	Amount appropriated		250 00
	Amount expended		250 00

WAR DEPARTMENT BUILDING.

Date.	To whom paid.	On what account.	Amount.
1879.			
July 3	Edward Sturges	Gas regulator	$175 00
12	Nuttall & Horn	Plumbing	26 00
15	John A. Baker	Trucks	72 00
19	M. R. Thorp	Storing coal	6 00
21	Daniel Leonard	Carpenters' materials	57 54
22	W. W. Tupper & Co	Grate bars	220 00
30	Hayward & Hutchinson	Adjusting gas regulator	8 65
31	Emma Dutch	Labor	15 00
31	John McDermott & Bros	Repairing mail-wagon	40 75
Aug. 1	Gold and Stock Telephone Company.	Rent of instrument	30 00
2	Solomon Stover	Coal	472 00
4	Daniel Leonard	Carpenters' materials	64 00
5	F. Schneider & Son	Hardware	226 57
6	C. W. Hayes	Rubber hose	144 75
7	Washington Gas Company	Gas	63 23
8	Bartlett, Robbins & Co	Ash box	29 50
23	J. W. Seay	Roofing	18 00
30	Emma Dutch	Labor	15 00
Sept. 1	Daniel Leonard	Carpenters' materials	63 50
2	Great Falls Ice Company	Ice	32 64
6	Washington Gas Company	Gas	60 75
8	A. Hahl & Co	Connecting electric bells	91 75
13	Nuttall & Horn	Plumbing	8 13
30	Emma Dutch	Labor	15 00
30	Washington Gas Company	Gas	76 05
30	Great Falls Ice Company	Ice	26 78
30	Daniel Leonard	Carpenters' materials	63 30
30	F. Lemmer	Locks and keys	30 50
30	Solomon Stover	Wood	94 00
30	Hayward & Hutchinson	Oil pump	12 00
Oct. 10	Gold and Stock Telephone Company.	Rent of telephones	30 00
18	Hugh Huneke	Sawing wood	15 25
31	Emma Dutch	Labor	15 00
Nov. 1	Daniel Leonard	Carpenters' materials	32 75
4	Great Falls Ice Company	Ice	27 04
6	W. E. Abbott	Soap	5 40
6	A. Hahl & Co	Electric bells	37 90
8	Washington Gas Company	Gas	72 68
12	W. W. Rapley	Coal hods	43 75
25	Mantz & Co	Harness	139 00
29	Emma Dutch	Labor	15 00
Dec. 1	Daniel Leonard	Carpenters' materials	123 85
2	Great Falls Ice Co	Ice	17 33
3	Solomon Stover	Wood and coal	253 88
4	F. Schneider & Son	Hardware	232 12
8	Washington Gas Company	Gas	99 68
8	J. W. Boteler & Bro	Soap, sponge	107 35
10	W. W. Rapley	Fire-place furnishings	317 70
13	William P. Kelly	Repairing buckets	3 00
16	H. W. Cockrill	Charcoal	10 00
19	George M. Schaefer	Awnings	594 00
19	James Jebb	Sawing wood	9 12
22	M. R. Thorp	Storing coal	2 50
27	W. W. Rapley	Coal hods	66 25
31	Honora Kelly	Labor	15 00
31	Great Falls Ice Company	Ice	14 52
31	Washington Gas Company	Gas	127 80
31	Daniel Leonard	Carpenters' materials	128 25
31	Solomon Stover	Wood and coal	248 00
1880.			
Jan. 27	Gold and Stock Telephone Company.	Rent of telephones	30 00
28	Louis Koerth	Cleaning out ash-vault	50 25
31	Honora Kelly	Labor	15 00
31	Richard Osborn	....do	10 00
Feb. 3	M. R. Thorp	Removing snow	8 75
7	Washington Gas Company	Gas	125 60
9	Great Falls Ice Company	Ice	14 18
11	Solomon Stover	Coal	320 00
28	Richard Osborn	Labor	36 25
28	Honora Kelly	....do	15 00
28	Great Falls Ice Company	Ice	12 25
Mar. 6	Washington Gas Company	Gas	140 40
9	Solomon Stover	Wood and coal	21 25
13	M. R. Thorp	Removing snow	3 20
31	Washington Gas Company	Gas	124 40
June 16	John A. Baker	Aquarius	10 00
18	William S. Mitchell	Matting	719 30
18	Washington Gas Company	Gas	184 80

WAR DEPARTMENT BUILDING—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
June 18	G. W. Caamberlen	Painting and glazing	$33 20
18	John McDermott & Bros	Repairing mail wagon	182 65
19	Great Falls Ice Company	Ice	34 92
19	J. W. Boteler & Son	Dusters, sponges	221 79
22	Bartlett, Robbins & Co	Plumbing	24 00
26	Louis Koerth	Hauling ashes and taking up carpets	147 00
30	Washington Gas Company	Gas	34 00
30	Murray & Barker	Shoeing horses	14 50
30	Oscar L. Berger	Winding clocks, &c	12 00
30	Daniel Leonard	Carpenters' materials	138 10
30	Mantz & Co	Harness	203 95
30	Jacob Blatzheim	Repairing locks and keys	7 75
30	Great Falls Ice Company	Ice	43 00
			8,000 00
	Amount appropriated		6,000 00
	Amount, deficiency act		2,000 00
	Total		8,000 00
	Amount expended		8,000 00

BUILDING ON F STREET.

1879.			
July 26	C. G. Thorn	Plumbing	$152 05
Aug. 7	Washington Gas Company	Gas	18 90
21	J. M. York	Carpentry	19 00
Sept. 6	Washington Gas Company	Gas	19 58
13	Francis B. Mohun	Shoe paper	8 00
29	R. W. Barker	Furniture	166 75
30	Washington Gas Company	Gas	15 30
30	Great Falls Ice Company	Ice	41 65
30	American District Telegraph Company.	Rent of instrument	21 00
30	Lorenzo Rice	Cleaning carpet	2 88
30	B. W. Reed's Sons	Roach powder, &c	8 45
30	William S. Mitchell	Carpets	179 29
Oct. 21	National Telephonic Exchange	Rent of telephones	12 50
29	S. J. Haislett	Taking down awnings	4 30
Nov. 8	Washington Gas Company	Gas	25 20
13	Singleton & Hoeke	Rugs	22 39
15	J. M. York	Boxes	32 00
Dec. 8	Washington Gas Company	Gas	33 08
12	C. G. Thorn	Plumbing	57 55
31	National Telephone Company	Rent of telephones	12 50
31	American District Telegraph Company.	Rent of instruments	21 00
31	Washington Gas Company	Gas	31 95
31	Great Falls Ice Company	Ice	40 43
31	William M. Brown	Towels	17 50
31	Singleton & Hoeke	Linoleum	87 78
31	M. W. Beveridge	Cuspidores	7 00
1880.			
Jan. 23	Francis B. Mohun	Stationery	30 50
24	Henry D Trask	Furnace governors	75 00
31	C. C. Wilson	Repairing stamp	2 00
31	B. W. Reed's Sons	Soap	27 40
Feb. 7	Washington Gas Company	Gas	28 60
14	J. M. Jork	Carpentry	47 25
17	L. D. McCormick	Staining case	4 00
20	William H. Dunn	Furniture	136 50
27	William S. Mitchell	Oil-cloth	52 20
Mar. 3	E. A. Jacobs	Shades	12 00
5	Charles G. Ball	Repairing chimney	22 50
6	Washington Gas Company	Gas	23 60
29	John W. Drew	Sponge	31 00
31	Great Falls Ice Company	Ice	40 94
31	L. H. Schneider & Co	Hardware	1 30
31	Washington Gas Company	Gas	20 40
31	American District Telegraph Company.	Rent of instruments	21 00
Apr. 17	J. M. York	Packing boxes	12 00
23	S. J. Haislett	Putting up awnings	6 85
30	B. W. Reed's Sons	Matches	14 55
May 7	Washington Gas Company	Gas	19 60
13	Charles G. Ball	Repairing chimney	18 50
June 7	Washington Gas Company	Gas	15 80

BUILDING ON F STREET—Continued.

Date.	To whom paid.	On what account.	Amount.
1880.			
June 8	Dennis Reilley	Kindling	$20 00
9	J. M. York	Carpentry	25 75
11	David B. Terrell	Storing wood and coal	31 50
12	Walter H. Marlow	Wood and coal	342 00
15	William W. Farr	Clock	43 00
19	William M. Brown	Towels	28 50
24	Lorenzo Rice	Cleaning carpets	43 00
25	Singleton & Hoeke	Carpets	418 50
29	R. J. Smith & Co	Replating waiter	6 00
30	J. M. York	Carpentry	85 00
30	R. W. Barker	Furniture	185 00
30	Charles G. Ball	Repairing furnaces	164 50
30	B. W. Reed's Sons	Soap, dusters	91 35
30	American District Telegraph Company.	Rent of instruments	21 00
30	M. W. Beveridge	Cuspidors	9 00
30	C. C. Wilson	Dating-stamp	14 75
30	William H. Dunn	Furniture	48 00
30	Great Falls Ice Company	Ice	63 75
30	Washington Gas Company	Gas	13 60
30	J. W. Drew	Chamois skins	7 58
30	Francis B. Mohun	Stationery	16 00
30	C. G. Thorn	Plumbing	75 70
30	National Capital Telephone Company.	Rent of instruments	25 00
			3,500 00
	Amount appropriated		3,500 00
	Amount expended		3,500 00

BUILDING CORNER SEVENTEENTH AND F STREETS—1879.

1879.			
July 23	Thomas Somerville	Steam and gas fitting	$84 76
			84 76
	Balance appropriation		314 07
	Amount expended		84 76
	Balance in Treasury		229 31

BUILDING CORNER SEVENTEENTH AND F STREETS—1880.

1879.			
July 22	Johnson Bros	Wood	$117 00
26	Thomas Cleary	Labor	12 00
26	James Lowe	do	12 00
28	W. W. Tupper & Co	Grate bars	124 25
31	Adolphus Adams	Laborer	40 00
Aug. 7	Washington Gas Company	Gas	14 40
15	Charles G. Ball	Repairing furnaces	626 25
30	Adolphus Adams	Laborer	40 00
Sept. 6	Washington Gas Company	Gas	14 63
30	Adolphus Adams	Laborer	40 00
30	Washington Gas Company	Gas	7 20
30	Barker Bros	Ice	5 30
30	F. Schneider & Son	Hardware	11 15
30	James Tindall	Grease for engine	5 58
30	William P. Kelly	Repairing roof	19 25
Oct. 10	H. W. Cockrill	Charcoal	21 60
18	J. B. McMullen	Steam boiler	350 00
31	Adolphus Adams	Laborer	40 00
Nov. 8	Washington Gas Company	Gas	17 10
10	A. O. Brummell	Painting	216 16
28	W. W. Farr	Repairing clock	3 00
29	Adolphus Adams	Laborer	40 00
Dec. 8	Washington Gas Company	Gas	15 75
11	Johnson Bros	Coal	30 00
13	R. A. Phillipps	Window cords	14 75
31	Adolphus Adams	Laborer	40 00
31	Washington Gas Company	Gas	21 60
31	Barker Bros	Ice	5 30
31	E. F. Simpson	Repairing stove	8 00
31	James Tindall	Grease for engine	3 99

BUILDING CORNER SEVENTEENTH AND F STREETS—Continued.

Date.	To whom paid.	On what account.	Amount.
1879.			
Dec. 31	F. Schneider & Son	Hardware	$14 37
31	James H. Byram	Carpentry	23 25
31	G. W. Chamberlen	Painting	45 25
31	James Kelly	Tin box	2 50
1880.			
Jan. 3	H. D. Trask & Co	Furnace governors	50 00
10	Thomas Somerville	Plumbing	19 38
31	Adolphus Adams	Laborer	40 00
Feb. 7	Washington Gas Company	Gas	23 00
12	George C. Maynard	Battery cells	3 70
21	James Kelly	Repairing roof, &c	3 50
27	William S. Mitchell	Oil-cloth	55 00
28	Adolphus Adams	Laborer	40 00
Mar. 6	Washington Gas Company	Gas	19 80
13	John H. Brown	Kalsomining	5 00
16	G. C. Shaw	Papering	15 50
20	Patrick Fitzgerald	Removing snow	15 50
26	Thomas Somerville	Plumbing	50 97
26	James H. Byram	Carpentry	10 00
26	G. W. Chamberlen	Painting	20 50
27	Charles G. Ball	Repairing pavements	33 67
30	James Tindall	Grease for engine	4 02
31	Adolphus Adams	Labor	40 00
31	Kennebec Ice Company	Ice	5 24
31	F. Schneider & Son	Cuspidors	12 51
31	Johnson Bros	Wood	50 00
31	Washington Gas Company	Gas	20 40
31	James Kelly	Strainers for gutter	12 00
Apr. 30	Adolphus Adams	Laborer	40 00
May 7	Washington Gas Company	Gas	17 60
31	Adolphus Adams	Laborer	40 00
June 8	James Cleary	Labor	10 50
17	Washington Gas Company	Gas	14 20
30	Adolphus Adams	Laborer	40 00
30	John H. Brown	Kalsomining	360 00
30	James H. Byram	Carpentry	89 75
30	Charles G. Ball	Resetting steam boilers	1,996 67
30	Washington Gas Company	Gas	18 20
30	Kennebec Ice Company	Ice	5 24
30	James Tindall	Grease for engine	2 31
30	Charles Chase	Hauling ashes	57 50
30	John A. Baker	Repairing lawn-mowers	2 50
30	M. G. Copeland & Co	Repairing awnings	143 50
30	Francis B. Mohun	Stationery	14 75
30	Thomas Somerville	Steam fittings	118 14
30	Peter Carroll	Sodding	36 80
30	James Cleary	Whitewashing	34 50
30	G. C. Shaw	Papering	406 52
			6,000 00
	Amount appropriated		6,000 00
	Amount expended		6,000 00

ADJUTANT-GENERAL'S OFFICE—OLD NAVY BUILDING.

1879.			
July 14	A. G. McIntosh	Sweeping chimneys	$13 20
16	George M. Schaefer	Window shades	144 75
26	H. H. Bradley	Office signs	47 00
Aug. 2	J. W. Boteler & Bro	Water cooler and stand	8 25
6	William S. Mitchell	Matting	218 20
7	Washington Gas Company	Gas	13 05
8	M. R. Thorp	Storing coal	14 69
12	H. Semken	Clock	50 00
14	Solomon Stover	Wood and coal	442 00
15	Benjamin Wanes	Charcoal	10 80
23	G. W. Chamberlen	Painting	56 97
23	G. M. Wight	Furniture	284 00
Sept. 5	Moses Tonsell	Sawing wood	18 00
6	Washington Gas Company	Gas	12 60
27	W. W. Rapley	Grates	303 50
30	Washington Gas Company	Gas	20 70
30	J. W. Boteler & Bro	Coolers and stands	17 50
30	Hayward & Hutchinson	Plumbing	35 66
30	F. Lemmer	Hanging bells	18 00
30	W. W. Rapley	Resetting grates	80 50
30	Solomon Stover	Wood	27 50

ADJUTANT-GENERAL'S OFFICE OLD NAVY BUILDING—Continued.

Date.	To whom paid.	On what account.	Amount
1879.			
Sept. 30	Henry Washington	Sawing wood	$10 00
Nov. 8	Washington Gas Company	Gas	30 38
24	Nuttall & Horn	Repairing gas pipes	3 80
Dec. 8	Washington Gas Company	Gas	29 25
13	William P. Kelly	Fitting zinc around registers	9 00
31	Washington Gas Company	Gas	32 63
1880.			
Feb. 7	Washington Gas Company	Gas	34 00
June 18	....do	....do	99 80
18	William S. Mitchell	Linoleum	67 40
30	Solomon Stover	Coal	160 00
30	F. Schneider & Son	Hardware	17 86
30	Daniel Leonard	Carpenters' materials	57 00
30	Washington Gas Company	Gas	14 60
30	Louis Koerth	Taking up carpets, cleaning, and storing	59 61
30	William S. Mitchell	Matting	38 10
			2, 500 00
Amount appropriated			2, 000 00
Amount, deficiency act			500 00
Total			2, 500 00
Amount expended			2, 500 00

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 11.

CLAIMS ALLOWED UNDER THE ACT JULY 4, 1864.

LETTER

FROM

THE ACTING SECRETARY OF THE TREASURY,

TRANSMITTING

Lists of claims allowed under the act of July 4, 1864.

DECEMBER 9, 1880.—Referred to the Committee on Claims and ordered to be printed.

DECEMBER 10, 1880.—Committee on Claims discharged, and referred to the Committee on War Claims.

TREASURY DEPARTMENT, *December* 8, 1880.

SIR: In compliance with the second section of the act of Congress approved June 16, 1874, I have the honor to transmit herewith, together with the papers in each case, lists of nine hundred and two claims arising under the act of July 4, 1864, examined and allowed by the proper accounting officers since December 1, 1879, amounting to $250,883.72.

Very respectfully,

H. F. FRENCH,
Acting Secretary.

Hon. SAMUEL J. RANDALL,
Speaker House of Representatives.

CLAIMS ALLOWED UNDER ACT OF JULY 4, 1864.

No.	Name of claimant.	County.	Allowed.
	WEST VIRGINIA.		
49,453	Bebby, Edward and James	Kanawha	$387 28
54,875	Beard, S. W	Pocahontas	300 00
55,582	Bates, S. A	Jefferson	2,490 50
55,968	Bower, Martin	Raleigh	10 00
56,334	Blackford, Ann C	Jefferson	145 00
49,020	Coberly, Elizabeth	Gilmore	135 00
53,736	Clendening, Andrew C., deceased, by J. H. Clendening, administrator.	Berkeley	570 00
54,198	Doll, Daniel, deceased, by Frank D. Staley, administrator	Berkeley	520 00
56,265	Davis, Samuel L	Fayette	52 50
56,232	Farley, Bayless G.; I. B. Murdock, administrator	Kanawha	217 34
56,368	Gaston, John	Harrison	135 00
53,841	Henshaw, Levi	Berkeley	290 00
55,526	Hanlin, Joseph	Grant	34 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed
	WEST VIRGINIA—Continued.		
55, 895	Hill, Mrs. Mary A	Berkeley	$540 00
55, 902	Hutton, Isaac, surviving partner of Job W. Hutton & Bro.	Hardy	765 00
56, 013	Hook, Robert	Hampshire	135 00
42, 375	Hess, David	Berkeley	907 50
56, 083	Hendricks, John W	Jefferson	160 00
56, 288	Harper, Henry	Randolph	1, 157 00
56, 373	Heath, Jonathan	Hardy	136 00
55, 442	Kittle, Rebecca, administratrix of Eli	Randolph	530 16
52, 738	Lamon, John W	Berkeley	543 00
54, 323	Lamon, Charles D. S	do	1, 085 50
55, 943	Lilly, David	Summers	235 75
56, 131	Leftwick, Joel	Kanawha	39 12
46, 261	McKeever, Abraham, deceased, by Martha McKeever, administratrix.	Pocahontas	485 00
53, 739	Martin, Squire H	Berkeley	251 25
54, 528	Michael, Adam	Grant	683 29
55, 493	Marsh, Eli, deceased; E. Marsh Turner, administrator	Harrison	125 00
55, 616	Myers, William H., deceased; John W. Roberts, administrator.	Jefferson	107 75
56, 172	McNeill, Benjamin S	Hardy	1,924 00
56, 382	Odell, Rebecca	Nicholas	100 00
56, 286	Phillips, Martin	Raleigh	111 00
50, 898	Rowley, Harry	Jackson	115 00
46, 016	Reynolds, Robert F	Kanawha	2, 140 00
53, 615	Reynolds, Henry W	do	1, 950 00
55, 592	Sydenstriker, Mrs. M	Greenbrier	225 90
55, 662	Sheaffer, William, deceased; Betsey Sheaffer, executrix	Jefferson	1, 480 00
55, 864	Smith, Canada	Raleigh	942 00
56, 188	Suttle, Harrison	Fayette	60 00
56, 438	Strider, Samuel W	Jefferson	512 80
56, 257	Sharp, Rebecca; J. W. Buzzard, administrator	Pocahontas	100 00
56, 190	Severance, Charles	Kanawha	100 00
55, 658	Turner, James, deceased; John D. Turner, administrator	Berkeley	195 00
56, 538	Thornburg, Solomon	do	95 00
56, 006	Violet, W. H	Hardy	125 00
56, 272	Van Meter, Ann and Rebecca	do	312 00
55, 449	Walker, William W	Berkeley	245 67
55, 619	Walker, Albert G	Kanawha	345 00
55, 595	Wysong, Thomas H	Jefferson	200 00
55, 597	Young, Susan J	Pocahontas	125 00
55, 596	Yerkey, Elias	Harrison	135 00
	VIRGINIA.		
50, 457	Scalock, Davis	Fauquier	359 00
	INDIANA.		
54, 303	Faulkner, C. R	Ripley	130 00
55, 534	Jenkins, George W	Clark	290 00
54, 865	Snell, Louis	Du Bois	180 00
54, 678	Willey, Louis	Decatur	120 00
	KENTUCKY.		
54, 462	Anderson, James	Metcalfe	8 00
54, 570	Askew, R. W	Logan	100 00
55, 465	Allgaier, Killion	Jefferson	189 00
54, 102	Beauchamp, Richard N	Simpson	2, 245 00
41, 943	Browning, Charles	Marion	120 25
54, 432	Burch, Ben	Warren	60 00
55, 476	Boston, C. K	Pendleton	90 00
52, 803	Batsel, Nathaniel, deceased	Nelson	88 75
55, 834	Barrett, Thomas J., deceased; G. W. Hines, administrator	Warren	53 46
55, 944	Branaman, Henry S	Rockcastle	28 00
55, 988	Bennett, James	Madison	220 00
56, 259	Beatty, Adam D., deceased; Belle Betty, administratrix	Grayson	120 00
56, 333	Bryant, Peter M	Adair	116 00
56, 356	Bowman, H. C	Bullitt	144 00
54, 431	Cook, William	Warren	117 00
54, 575	Carter, James D	Hart	215 00
54, 426	Covington, Albert	Warren	1, 295 00
54, 700	Cary, Archibald	Cumberland	14 00
55, 629	Cecil, Samuel W	Morgan	371 00
56, 007	Castle, Lucinda, formerly Preston	Johnson	60 00
55, 963	Carder, Samuel	Monroe	100 00
56, 253	Collins, William C	Cumberland	110 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	KENTUCKY—Continued.		
56, 254	Collins, J. H	Allen	$24 00
53, 989	Durham, Nelson	Harlan	23 63
53, 049	Davis, Joseph A., administrator of James Davis, deceased	Pulaski	354 00
21, 167	Dunn, Gatewood B	Fayette	1, 401 00
46, 132	Duff, Nancy, widow, and agent of the heirs of Charles E. Davis.	Wolf	75 00
54, 704	Dick, John, administrator of Sarah Dick, deceased	Pulaski	50 00
55, 654	Dier, Gardner H	Morgan	100 00
55, 655	Drury, Milley J	Muhlenburgh	120 00
55, 653	Drain, Joseph H	Grayson	100 00
56, 287	Dills, John, jr	Pike	1, 587 50
56, 361	Danner, Jacob	Jefferson	141 12
52, 211	Elliott, William, and Lankford Warfield, executors of Elliott, James, deceased.	Knox	136 25
56, 028	Edeline, Horace	Washington	200 00
56, 330	Essex, J. Wesley	Nelson	90 50
55, 139	Fortune, James C., administrator of Lewis Fortune	Montgomery	100 00
55, 901	Floyd, William S	Shelby	75 00
56, 157	Ford, Alethia	La Rue	520 00
54, 407	Gorin, T. B	Warren	100 80
54, 412	Graham, James A	do	155 00
54, 393	Grider, John H	do	56 00
55, 947	Gregory, John, sr	Muhlenburgh	55 00
56, 311	Grimsley, James F	Monroe	100 00
56, 370	Gillenwater, Lushen	do	75 00
54, 040	Herd, Hugh	Clay	100 00
54, 396	Hodge, Mary A	Warren	222 80
54, 571	Hynes, Isaac L	Meade	19 00
55, 545	Hardy, Richard, administrator of J. O. Hardy	Logan	310 00
55, 572	Haskins, Levi	Knox	18 00
42, 942	Hughes, Jordan	Marion	90 00
55, 945	Hayes, James H	Washington	230 00
56, 002	Hinton, Proctor	Hardin	125 00
56, 015	Humphrey, David	Barren	35 00
56, 016	Helton, John	Knox	37 50
56, 314	Heaton, Amelia A., formerly Gardner	Logan	128 00
56, 279	Hood, Thomas J	Monroe	125 00
56, 376	Hurt, Thomas, deceased, estate of	Clinton	128 00
49, 253	Jones, Mary, administratrix of John J. Jones, deceased	Knox	448 00
55, 491	Jepson, Casander L	Simpson	150 00
55, 894	Jackson, N. B	Warren	61 60
56, 000	Jones, B. P	Christian	69 00
56, 050	Jones, John S	Knox	120 00
56, 092	Johnson, Willis	Hart	49 00
56, 320	Jones, Jeremiah	Whitley	24 75
56, 076	Keilty, William	Nelson	110 00
56, 082	King, Andrew J	Rockcastle	70 00
56, 090	King, Andrew C	Whitley	93 70
54, 564	Loving, Eliza J	Warren	140 00
49, 149	Logsdon, William J	Hart	187 50
56, 087	Lambert, John B	Union	280 00
55, 881	Luker or Laker, Frank, deceased; Frederick Luker, administrator.	Jefferson	197 50
56, 052	Lee, Robert M., deceased; O. A. Kelley, administrator	Bullitt	120 00
45, 814	McGuire, A. D., deceased, by S. P. Hogg, administrator	Lee	250 00
53, 740	Merrifield, S. B., deceased, by S. B. Merrifield, administrator.	Nelson	804 00
54, 434	McGoodwin, Jennie W	Warren	155 00
54, 495	Mann, Beverly	Nelson	30 85
54, 525	Marrs, A. S	Warren	140 00
54, 526	Meador, Joseph G	do	120 00
55, 274	Martin, Joseph W	Allen	100 00
54, 868	Miller, James H	Warren	180 00
19, 846	Morgan, John B	Allen	155 00
55, 455	Miller, W. C., deceased; E. E. Miller, administrator	Warren	54 09
55, 999	McGuire, James, sr., deceased; James McGuire, administrator.	Owsley	189 00
56, 051	Mitchell, William	La Rue	125 0
55, 946	Mason, Bratcher	Bell	67 50
56, 049	McFeelie, Nancy	Hart	35 00
56, 070	Moore, Elijah	Allen	100 00
56, 242	McDowell, Woodford	Bullitt	72 00
56, 255	McLemore, Goodwin	Logan	150 00
56, 310	Moss, Rufus M	Bell	212 00
53, 839	Nicholson, L. B	Clay	25 20
55, 560	Nickell, Miles W	Morgan	30 05
55, 586	Newby, W. B	Cumberland	10 00
55, 900	Overton, Thomas	Breckinridge	115 00
54, 569	Page, John B	Monroe	200 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	KENTUCKY—Continued.		
55,136	Phelps, C. M	Warren	$180 00
55,281	Phelps, J. W	do	140 00
54,783	Pope, Zack	Washington	40 62
56,260	Pryor, Jonathan	Trigg	100 00
56,289	Pace, London P	Metcalf	40 00
52,686	Rankin, James A	Shelby	60 50
54,867	Rush, F. M	Warren	155 00
55,904	Richey, James H	Cumberland	5 00
55,906	Rodes, Levi T	Fayette	300 00
55,590	Runyan, F., deceased; J. S. Dickinson, administrator	Todd	442 50
56,197	Reynolds, Eli	Owsley	90 00
56,217	Roher or Rohrer, Rolly	Logan	87 50
56,228	Read, Charles A	Rockcastle	83 25
56,347	Rich, Joseph B	Kenton	192 00
55,141	Steger, Francis M	Garrard	93 48
55,480	Sears, Bradford	Warren	522 00
54,774	Smith, Fleming	Logan	135 00
55,865	Smith, John, deceased; Enoch A. Smith, administrator	Bell	43 50
55,879	Sneider, Anna	Jefferson	6 00
55,994	Steele, Andrew	Whitley	140 00
56,093	Smith, George, deceased; James E. Smith, administrator	Meade	125 00
56,171	Sims, James A., deceased; J. P. McGee, executor	La Rue	430 00
56,196	Stoner, Porter; John B. and Mary A. Stoner, executors	Nelson	130 00
56,206	Steel, John	Pike	115 00
56,235	Scrimeger, Samuel D	Barren	140 00
56,283	Seddon, W. E	Mason	85 00
56,439	Smith, Thomas, deceased; G. T. Smith, administrator	Meade	120 00
56,437	Swearinger, Elijah	Simpson	550 00
54,436	Tooley, Theodrick, administrator of Arthur Tooley	Monroe	125 00
55,563	Thomas, Alexander W	Jefferson	42 52
56,191	Thompson, Hiram	Knox	22 25
56,442	Thompson, Nancy P., deceased; J. G. Kyle, administrator	Mercer	555 00
53,676	Waldeck, Alexander S., deceased, by James C. Elam, administrator.	Morgan	487 20
53,840	Wilson, James M., and Elizabeth, his wife	Pulaski	80 00
35,881	Wolverton, Silas	Fayette	340 00
55,458	Williams, Isaac N. and James F	Allen	125 00
54,255	Winston, B	Logan	140 08
54,741	Whitney, Alphonzo	Barren	900 00
55,608	Wheeler, J. M., deceased; John H. Divasher, administrator	Allen	95 00
54,751	Walters, John; William B. Reed, executor	La Rue	155 00
54,620	Walker, William T	do	180 00
56,270	Young, Samuel S	Hart	263 00
	DISTRICT OF COLUMBIA.		
54,244	Mathiott, George, deceased, by Martha E. Mathiott, executrix.	Washington	132 19
54,492	Moore, David	do	248 22
54,494	Moore, George E., jr	do	526 73
55,594	Watson, Lewis, deceased; Elizabeth Watson, administratrix.	do	1,596 90
	COLORADO.		
53,711	Middaugh, Asa F	Arapahoe	484 00
	IOWA.		
54,105	Smith, Samuel	Dallas	220 00
	ILLINOIS.		
50,278	Peterson, Elisha A	Towanda	50 00
50,651	Watson, James	Douglas	135 00
	KANSAS.		
53,998	Anderson, John, deceased; by John Harrell, administrator	Douglas	270 00
54,032	Brown, Valorous	Jefferson	125 00
55,699	Darling, Charles J	Labette	80 00
45,132	Lewis, William L	Miami	85 00
56,512	Rowe, Daniel	Allen	125 00
52,166	Walton, Benjamin F	do	100 00
	MISSOURI.		
55,641	Atkinson, W. C	Texas	50 40
53,871	Barnes, F. W	Boone	125 00
55,640	Bennett, John W	Christian	150 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	MISSOURI—Continued.		
55, 966	Brewer, Joseph	Oregon	$100 00
56, 421	Browning, Elijah	Lawrence	430 00
55, 631	Candron, Thomas	Jackson	24 00
56, 358	Cresman, William	Pulaski	101 25
56, 364	Denkle, John C	Lawrence	15 00
55, 503	Elling, Henry	Lafayette	124 00
56, 365	Entreken, John	Pettis	36 00
53, 242	Good, John H	Webster	145 00
54, 714	Hobson, Finis L	Johnson	975 00
55, 948	Haselmeyer, Henry	Saline	135 00
56, 073	Harrison, William, deceased; C. B. L. Rowland, administrator *de bonis non.*	Wayne	235 00
56, 375	Hooper, G. W	Laclede	110 00
56, 524	King, William	Calloway	205 00
56, 047	Long, William	Jackson	150 00
53, 300	McCoy, David	Lewis	189 00
55, 532	Milarn, Lurinda	Cooper	200 00
55, 492	Matherly, Fleming W	Laclede	52 94
56, 175	Mann, James	Reynolds	232 00
56, 332	Mers, F. D	Cass	45 00
56, 379	Moore, John W	Lawrence	118 00
55, 559	Newberry, Edward	Iron	150 00
56, 381	Nunnally, J. C	Osage	112 50
54, 721	Pulis, John Jay	Knox	135 00
55, 856	Prock, Preston	Wright	137 50
55, 940	Patterson, William, deceased; G. R. Patterson, administrator.	Wayne	300 00
54, 413	Roberts, Robert; Milton Moore, administrator	Jackson	600 00
56, 133	Roark, William C	McDonald	200 00
56, 159	Ringo, Alvin	Audrain	150 00
56, 207	Raney, Ira M	Iron	425 00
56, 274	Robertson, John	Moniteau	150 00
56, 351	Ralston, Isaac F	Macon	160 00
53, 582	Smith, Martin	Daviess	110 00
55, 462	Stiffler, George C	do	100 00
55, 880	Strawhorn, John	Phelps	63 00
56, 462	Stegner, John Paul	Cooper	101 60
56, 170	Taylor, Nancy Jane	Stoddard	60 00
52, 854	Whitlock, Thomas J	Greene	54 70
50, 590	Williams, John, deceased; by John Smith, administrator	Newton	150 00
54, 440	Williams, James M	Lawrence	246 24
56, 386	Warner, John I	Greene	125 00
54, 521	Yeary, H. P	Crawford	8 00
	MARYLAND.		
46, 223	Ahalt, Daniel	Frederick	50 70
50, 609	Barnsley, Margeret A. R., executrix	Montgomery	190 50
54, 219	Buxton, William, deceased; by J. T. Buxton, administrator	do	120 00
55, 490	Brandt, G. W	Prince George's	48 00
55, 949	Byers, Martha, deceased; by John D. Byers, administrator.	Washington	300 00
56, 452	Bombarger, Jacob	do	10 00
52, 111	Claggett, Elizabeth, deceased; by Claggett, Cornelius H., administrator.	Montgomery	40 00
53, 923	Cyester, Samuel	Washington	285 50
35, 184	Connell, William G. (see claim of Homillar and Duvall)	Montgomery	240 00
54, 548	Collins, Richard	do	584 50
55, 853	Chaney, Elias	Washington	1, 665 00
56, 017	Emmert, Jacob	do	135 00
56, 253	Emmert, Leonard	do	149 00
56, 335	Everhart, George	Carroll	50 00
55, 854	Emmert, Martin	Washington	413 75
56, 425	Folks, Ignatius	Montgomery	369 50
45, 755	Geeting, Ephraim	Washington	309 29
49, 217	Getzendanner, Edward T. and Daniel, executors of Getzendanner, Daniel, deceased.	Frederick	389 50
55, 611	Gehr, William M	Washington	315 25
56, 008	Graff, Joseph, deceased; Rosanna Graff, executrix	do	118 85
56, 352	Gates, Christian	do	15 00
35, 184	Homillar, William, and Joseph Duvall	Georgetown and Baltimore.	970 00
55, 656	Heyser, John H	Washington	658 00
55, 862	Hammond, David C., and as agent for S. Armstrong	do	52 57
55, 859	Hockersmith, William, deceased; John Hockersmith, administrator.	Frederick	258 00
56, 233	Hager, William H	Washington	936 00
55, 964	Herring, Mary M., deceased; Lloyd H. Herring, administrator.	Frederick	69 00
54, 246	Johnson, John	Montgomery	215 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	MARYLAND—Continued.		
55, 574	Jacques, Lancelot	Washington	$129 00
55, 960	Jones, William	do	245 00
12, 981	Jacques, Lancelot	do	75 60
39, 974	Kennedy, George S	do	125 00
54, 784	Krautz, Frederick	Frederick	50 00
56, 075	Knode, Urias	Washington	149 62
56, 110	Knode, Mary; by Jere. Knode, agent	do	342 00
55, 553	Kirk, Richard S	Montgomery	280 20
54, 301	Lutman. Elizabeth, executrix of Arnold Lutman	Baltimore	990 00
55, 555	Morin, Upton	Washington	603 80
56, 429	McCahill, Sarah A., formerly West	Montgomery	110 00
55, 851	Michael, Adam, deceased; Caleb Michael, administrator	Washington	1, 410 00
56, 003	Newcomer, Henry	do	135 00
55, 980	Orrick, George W	do	125 00
55, 576	Poffenberger, Harry	Frederick	180 00
56, 187	Perry, Eli	Montgomery	163 75
56, 432	Purdum, Jemima	do	58 00
53, 699	Richards, William G	Charles	44 80
54, 677	Richter, John C. H	Montgomery	36 00
55, 993	Reynolds, James, deceased; Maria and Mary Reynolds, administratrix.	Alleghany	117 95
56, 315	Roche, Eliza L., formerly Mitchell	Frederick	246 65
56, 459	Radcliff, J. G., deceased; Mace Radcliff, widow	Charles	6 50
54, 041	Spickler, Frisby T	Washington	76 91
56, 079	Stemmer, Joseph	do	150 00
55, 591	Smith, Otho B	do	377 37
55, 591	Smith, Otho J., deceased; O. B. Smith, Josiah F. Smith, and John M. Gaines, executors.	do	1, 043 57
55, 739	Specht, Lewis	Frederick	60 00
56, 237	Spedman, William H	Washington	169 80
56, 285	Smith, George F., deceased; Alfred C. Huffer, administrator.	do	180 00
56, 441	Stonebreaker, John W	do	426 00
46, 028	Thomas, Alfred	do	60 00
10, 293	Talbott, Samuel, deceased; George E. Talbott, administrator.	Frederick	310 00
55, 475	Watkins, Thomas	Washington	42 00
56, 005	Warrenfeltz, Sol.; Ann Warrenfeltz and D. Long, administrators.	do	85 99
37, 938	Yingling, Henry	do	15 20
	PENNSYLVANIA.		
56, 455	Buddy, Francis M	Adams	124 00
56, 321	Bubb, Nicholas, deceased; N. Adams, J. Bubb, administrators.	York	474 00
55, 898	Dawney, John	Franklin	110 00
55, 607	Deihl, Isaac M	Adams	373 64
56, 030	Felty, Catharine K	do	26 25
56, 282	Gilbert, Henry	Franklin	73 50
55, 614	Hoffman, Henry	Adams	192 50
56, 378	McGinley, G. W	Franklin	121 60
54, 482	Phimiff, Peter and George	Fulton	150 00
56, 384	Ramsey, J. M	do	145 00
55, 866	Spangler, George	Adams	60 00
	OHIO.		
53, 372	Anderson, Samuel, deceased, by Anderson, Joshua, administrator.	Harrison	135 00
53, 371	Arbuthnot, James	Adams	125 00
53, 370	Belt, William	Clermont	100 00
53, 378	Burnett, John	Jefferson	130 00
45, 643	Bigamon, Solomon	Highland	83 00
45, 190	Brokaw, John, deceased, by E. M. S. McConnell, executor	Harrison	130 00
44, 765	Bailey, Richard, deceased, by Eli and Ellis W. Bailey, executors	do	125 00
44, 979	Bower, Joseph	Guernsey	40 00
54, 107	Brown, Adeline, widow of Isaac Brown, deceased	Pike	45 00
45, 185	Beard, George	Jefferson	100 00
44, 639	Blackledge, Aaron	Harrison	125 00
54, 545	Boyd, Erasmus D	Brown	125 00
50, 471	Bates, Hugh	Guernsey	100 00
55, 697	Bunn, Henry C	Jackson	115 00
55, 698	Behenn, John L	do	15 00
56, 506	Bowen, Clovis H	Hamilton	130 00
44, 709	Brown, Daniel	Jefferson	120 00
44, 416	Clark, Stephen B	Guernsey	125 00
46, 787	Corn, James	Jackson	125 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	OHIO—Continued.		
44, 861	Cockins, Vincent	Guernsey	$135 00
51, 069	Crawford, Abel J	Jefferson	135 00
54, 523	Cannon, B. N	Adams	135 00
54, 524	Clark, F. H	do	100 00
45, 198	Comly, James	Jefferson	110 00
44, 658	Campbell, Samuel S	Harrison	110 00
55, 708	Clark, Pickett	Jackson	110 00
52, 639	Dickerson, Simeon, deceased, by Anna White, administratrix.	Guernsey	87 50
54, 120	Day, Hiram S., deceased, by Wilmina Day, administratrix.	Brown	125 00
52, 398	Davis, William	Clermont	80 00
54, 562	Dickerson, Joshua	Harrison	6 50
55, 275	Deaver, Samuel H	Vinton	75 00
44, 983	Donahue, James	Guernsey	100 00
55, 700	Eisenawgle, Henry	Jackson	85 00
55, 709	Evans, David, deceased; D. D. Evans, administrator	do	85 00
55, 725	Evans, David D	do	85 00
52, 235	Fryman, William M	Clermont	125 00
53, 367	Faul, Jacob, deceased, by Margaret Faul, widow	Brown	100 00
55, 535	Faulkner, William, deceased; Rebecca Faulkner, administratrix.	Jackson	94 50
53, 379	Garland, Benjamin F	Hamilton	125 00
54, 020	Garland, John R., deceased, by Benjamin F. Garland, administrator.	Clermont	190 00
54, 543	Gorman, John H	Highland	30 00
55, 286	Gatch, A. M	Clermont	210 00
47, 183	Griswold, Julia C., deceased; S. Churchill, administrator	Jackson	125 00
52, 173	Hulick, Charles R	Clermont	90 00
53, 506	Hibbs, Stephen	Guernsey	120 00
44, 867	Hauser, David, deceased, by O. L. Hauser, administrator	Jefferson	95 00
53, 583	Harlan, Samuel L., deceased, by William S. Harlan, executor.	Morgan	420 00
53, 891	Hodges, Frank M., administrator of A. J. Hodges, deceased.	Clermont	130 00
45, 203 45, 204	Hoyle, John, jr	Jefferson	265 00
44, 872	Hawthorn, David	Harrison	100 00
53, 983	Holter, Alfred	Clermont	270 00
54, 522	Hawes, Samuel S	Meigs	100 00
54, 317	Holcomb, Matthias	Gallia	80 00
53, 369	Harper, Ebenezer, father of John Harper, deceased	Guernsey	30 00
54, 484	Huston, John A., administrator of James Huston	Hamilton	80 00
55, 434	Hubbell, Jabez; Harry Hubbell and E. S. Branch, executors	Meigs	90 80
55, 632	Harker, C. P	Clermont	200 00
53, 892	Ickis, Thomas H	Jefferson	135 00
53, 364	James, William S	do	30 00
53, 870	Jamison, John C	Harrison	120 00
55, 446	Johnson, Uriah	Guernsey	70 00
55, 701	Jones, David, deceased; Homer C. Jones, administrator	Vinton	75 00
56, 523	Jackson, Elizabeth	Scioto	75 00
53, 366	Kaho, Daniel	Guernsey	90 00
53, 376	Kidd, Eliza Jane, widow of D. Kidd, deceased	do	70 00
54, 012	Kennedy, C. G	Harrison	100 00
55, 461	Kaufman, Martin, deceased; A. M. Kaufman, administrator	Jackson	189 00
53, 635	Lindsey, Thomas	Brown	50 00
53, 636	Lewis, Samuel	Jackson	106 00
53, 984	Long, James, jr., deceased, by S. B. Long, administrator	Highland	100 00
55, 702	Lambert, B. F	Morgan	120 00
52, 192	Larrick, Levi	Noble	100 00
56, 487	Long, Randal	Jackson	75 00
53, 374	McSurely, Hugh	Adams	125 00
53, 377	Morrison, Hugh P	Guernsey	100 00
47, 466	McIntosh, A. S	Columbiana	165 00
53, 980	Marriott, Benjamin	Clermont	125 00
53, 971	Megrail, James	Jefferson	130 00
54, 031	McKeown, William	Harrison	65 00
45, 207	Miller, Jason	do	110 00
46, 721	McLennan, Daniel	Jefferson	125 00
44, 776	Miller, Thomas W., deceased; William Farmer Miller, administrator.	do	125 00
53, 368	Miller, Rosanna; Peter Miller, administrator	Adams	120 00
44, 992	Montgomery, Hugh, deceased; William Montgomery, administrator.	Jefferson	90 00
55, 703	Mackley, Davis	Jackson	80 00
51, 216	Mansfield, John	Harrison	2 50
56, 445	Martin, Gano	Clermont	100 00
44, 894	Ogelvee, David	Harrison	135 00
53, 365	Pickering, Samuel	Athens	185 00
53, 580	Pumphrey, Milo	Columbiana	100 00
53, 363	Plyley, John P., deceased, by James W. Delay, administrator.	Vinton	100 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	OHIO—Continued.		
54, 568	Porter, Adam D	Harrison	$75 00
47, 329	Porter, Powel B	Highland	110 00
45, 624	Reynolds, Morris	Brown	100 00
44, 722	Riddle, James	Jefferson	270 00
44, 996	Rex, Martha	Jackson	60 00
50, 641	Rittenhouse, Jonathan C.; Jane S. Rittenhouse, executrix	Hamilton	534 00
53, 468	Saltsgaver, William	Guernsey	85 00
49, 962	Starr, David J	Hamilton	40 00
53, 581	Sellers, Levions	do	80 00
54, 106	Shields, Thomas J	Butler	235 00
54, 483	Shook, Andrew	Pike	225 00
54, 544	Sargent, Henry W	do	120 00
55, 440	Smith, John M	Jackson	175 00
55, 830	Scott, Alex. F., deceased; Wm. Vermillion, administrator	Jefferson	207 50
55, 705	Schellinger, William	Jackson	100 00
55, 704	Stevens, William	Guernsey	70 00
54, 561	Starkey, Joseph K	Monroe	67 00
54, 186	Henry B. Bear, Ezra Sherman, and Frederick Faulhaber, trustees of United Society of Shakers.	Hamilton	270 00
55, 562	Thomas, Henry	Jackson	18 00
56, 488	Tener, George C	Adams	25 00
54, 187	Vance, T. P., administrator of Vance, David, deceased	Highland	225 00
53, 970	Vaughn, Thomas H	Jackson	75 00
49, 761	Van Eman, Andrew	Adams	100 00
53, 375	Warne, Clinton	Guernsey	75 00
52, 743	Williams, Lewis, deceased, by Samuel M. Pollock, admin'r	Jackson	107 00
53, 373	Wright, James	Hamilton	125 00
54, 179	Webster, Isaac A., deceased, by Webster, Reuben, executor.	Meigs	100 00
54, 185	Whaley, Elizabeth, widow of Joseph Whaley, deceased	Jackson	110 00
54, 501	Weaver, John W	Adams	100 00
52, 169	Wright, Winfield S.; A. E. Wright, administrator	Brown	20 00
55, 740	White, Isaac J.; John L. Ramsey, executor	Jackson	65 00
45, 092	Woods, Joseph E	Adams	90 00
54, 178	Weaver, Francis C	Clermont	135 00
56, 446	Warne, John J	Guernsey	75 00
56, 447	Winn, George	Butler	135 00
	TENNESSEE.		
54, 500	Alexander, Hugh B	Wayne	100 00
55, 502	Alexander, Thomas	Greene	145 00
55, 539	Allen, B. M	Williamson	110 00
55, 602	Abernathy, John S	Shelby	400 00
55, 601	Anderson, Dr. John B	Hardeman	250 00
	Anderson, Elizabeth, formerly Eastman	do	212 00
55, 938	Anderson, Josiah	Carroll	24 00
55, 958	Ashworth, George	Wilson	125 00
55, 962	Adams, W. C., deceased; W. H. H. Gillespie, administrator	Hardeman	241 40
56, 234	Alexander, Dolly J	Henderson	100 00
56, 231	Allen, Margaret, deceased; W. F. Bruce, administrator	Lincoln	200 00
53, 677	Austin, J. H	Davidson	62 50
52, 941	Barnett, Drury, deceased, by G. R. Owen, administrator; with will annexed.	Rutherford	320 00
54, 212	Bramlitt, F. M	Giles	405 00
54, 210	Butt, R. C	Sumner	98 00
54, 286	Bagley, Peter	Lincoln	135 00
54, 430	Barnes, Jennie (formerly Lerew), administratrix of Joseph Lerew, deceased.	Knox	87 00
54, 414	Black, W. H	Lawrence	570 00
54, 310	Brabson, Thomas C	Knox	853 25
54, 409	Brooke, William, deceased, by John Y. Hutcheson, administrator.	Robertson	450 00
54, 574	Bell, Adam, deceased, by W. L. Holt, administrator	Giles	946 00
54, 420	Black, John G., deceased, by O. M. Blackman, administrator.	Montgomery	200 00
54, 456	Brown, John	Giles	965 00
54, 460	Broyles, Ezekiel M	Sevier	315 00
54, 321	Buford, Albert, deceased, by Clara L. Buford, administrator	Giles	1, 120 00
55, 144	Brown, Eliphalet	Hardeman	315 50
55, 142	Branham, E., executrix of A. G. Branham	Sumner	580 00
55, 278	Bizzell, Raiford	Hardeman	335 00
55, 138	Bond, John	Wilson	500 00
55, 443	Bailey, Samuel H	Sumner	233 00
55, 464	Bryant, James K. P., executor of Matthew Hammons	Wilson	350 00
55, 459	Beard, John	do	375 00
55, 540	Bradley, Crusoe	Smith	299 00
55, 533	Bartlett, Rebecca E., administratrix G. M. Bartlett	Shelby	1, 015 00
54, 702	Byram, Samuel, executor of James C. Barry	Robertson	200 00
54, 753	Black, T. N	Henderson	330 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	TENNESSEE—Continued.		
54, 873	Burrow, Calvin J	Bedford	$100 00
54, 874	Brasfield, George R., administrator of A. C. Brasfield, deceased.	Weakley	150 00
55, 549	Batte, Mary, formerly Mary Sykes	Giles	200 00
55, 285	Brinkley, Henry, deceased; G. W. Brinkley, administrator	Cheatham	100 00
55, 603	Baker, Miles R	Weakley	140 00
55, 864	Blair, James T	Roane	1, 000 00
55, 636	Bryson, William B	Cannon	255 00
55, 642	Blazer, Wesley A	Sevier	125 00
55, 648	Black, James A	Carroll	140 00
55, 649	Black, Leander, deceased; Louisa Black, executrix	Fayette	1, 442 10
55, 643	Bumpass, Robert	Lawrence	100 00
55, 833	Boyd, John	Giles	260 00
55, 860	Bishop, William W	Lawrence	40 00
50, 585	Bounds, T. I., E. S., M. C., and G. M	Knox	425 00
55, 874	Barker, Alvis	Gibson	200 00
55, 878	Buchanan, Thomas	Williamson	307 00
55, 951	Baker, James W	Madison	135 00
55, 936	Bunch, Joseph	Maury	100 00
55, 955	Brockwell, Archibald	Washington	120 00
55, 961	Bell, Harriet	Rutherford	125 00
55, 998	Baugh, William A	Giles	50 40
56, 001	Bird, George L	Sevier	150 00
55, 877	Bland, W. C., deceased; J. B. Bland, administrator	Lincoln	125 00
56, 198	Boyd, George W	Williamson	80 00
55, 488	Bolerjack, John, by C. T. Giles, administrator	Gibson	1, 780 00
56, 181	Barnard, James M	Claiborne	343 00
56, 454	Brown, James M	Shelby	100 00
56, 355	Baugh, William A	Giles	3, 275 00
56, 269	Bradbury, John, deceased; J. B. Bradbury, administrator	Madison	425 50
55, 903	Birthwright, Williamson; R. B. Hays, administrator	Wilson	505 00
56, 419	Bains, B. M	Smith	100 00
56, 420	Bishop, W. J	Fayette	80 00
56, 453	Brown, Claibourn	Knox	90 00
53, 712	Chandler, John, deceased, by B. M. Chandler, executor	Sevier	1, 395 75
54, 119	Caswell, Elizabeth C	Knox	500 25
54, 247	Clark, John A	Cheatham	135 00
54, 251	Cobb, B. H	Knox	2, 190 62
54, 318	Chandler, B. M	Sevier	1, 265 00
54, 333	Cook, John	Robertson	125 00
54, 576	Cowan, Robert W., deceased, by John W. Cowan, administrator.	Bedford	481 86
54, 335	Cunningham, John, deceased, by J. A. Blankenship	Wilson	120 00
54, 418	Chandler, Timothy	Sevier	90 00
54, 498	Carter, John T	McNairy	125 00
54, 422	Choate, G. W	Dickson	125 00
55, 283	Casey, Penelope	Hardeman	175 00
55, 145	Call, E. A	Coffee	275 00
55, 453	Corpier, John W	Lincoln	400 00
54, 866	Coleman, Joshua C	Bedford	290 00
55, 131	Crowson, Richard W	Sevier	326 50
55, 282	Croft, Samuel	Knox	519 37
55, 457	Cason, G. W	Wilson	245 00
55, 441	Carter, John M	Greene	280 00
55, 605	Callaway, Laura E., Elizabeth E., Cornelia R., Addie N., William S., and John L., heirs at law.	McMinn	57 00
55, 606	Cole, A. O	Wayne	210 00
55, 626	Cardwell, Green	Claiborne	75 00
55, 627	Carmichael, Lemuel	Sevier	125 00
55, 628	Clardy, Patrick H	Davidson	232 00
53, 695	Coffman, H., administrator of P. Henry, deceased	Grainger	253 13
	Coffman, H. (in his own right)	do	253 12
55, 857	Cochran, James B	Blount	150 00
55, 858	Collins, Elisha C	Davidson	300 00
55, 873	Cox, Richard, deceased; H. P. Hobson, administrator	Fayette	4, 055 40
55, 966	Chadwick, John	Stewart	100 00
56, 012	Crawford, William W	Henry	1, 107 50
55, 453	Clark, William, deceased; L. L. Clark and M. L. Thompson, administrators.	Lincoln	570 00
56, 019	Chapman, H. T	Giles	654 00
56, 173	Collins, E. A	Gibson	250 00
56, 208	Charlton, G. W., deceased; E. and L. Charlton, administrators.	Davidson	1, 053 80
55, 630	Criswell, T. A	Wilson	130 00
56, 230	Curtis, John T	Lincoln	525 00
56, 268	Childers, Joseph B	Giles	76 30
56, 359	Coltharp, Andrew J	Monroe	301 80
56, 360	Conley, Jos. A	Washington	130 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	TENNESSEE—Continued.		
55,477	Coleman, W. H., deceased; Thomas P. Holt, administrator.	Williamson	$300 00
54,279	Davis, Thomas	Greene	225 00
53,678	Davis, Joseph D	Lake	1,800 00
54,394	Davis, Aquilla	Rutherford	800 70
54,572	Dishough, Augustine, deceased, by Arreny Dishough, administrator.	Giles	250 00
55,133	Drinkard, Presley	Lincoln	100 00
54,713	Dix, William	Davidson	129 75
54,742	Davenport, Elizabeth	Montgomery	100 00
55,481	Draper, S. L	Davidson	160 00
55,610	Duncan, Thomas N	Carroll	280 00
55,659	Dodds, Jesse W., deceased; Margaret Walker, administratrix.	Meigs	240 00
54,496	Deaton, Isaac	McNairy	80 00
55,609	Doyle, Joseph, deceased; R. D. Doyle, administrator	Hardeman	264 00
56,158	Douglass, David D.; Mary B. Douglass, administratrix	Fayette	804 00
56,186	Dumas, Louisa	Henry	730 00
56,179	Dickie, Nancy P	Henderson	75 00
56,223	Dickson, James H	Weakley	135 00
56,362	Danumbra, Wilson	Cheatham	110 00
56,363	Dromgoole, George C	Rutherford	326 25
39,647	Evans, Augustine (supplemental)	Hamilton	200 00
55,529	Ellis, Littleton	Davidson	545 00
55,542	Edwards, Abner	Cheatham	110 00
56,034	Edgmond, W. S	McMinn	260 00
56,307	English, James E	Lincoln	200 00
56,366	Everly, George, deceased; E. F. Everly, administrator	Giles	440 00
56,367	Ely, Elias	Claiborne	225 00
54,424	Fox, Campbell	Sevier	167 28
54,302	Fox, Eli	Jefferson	157 00
54,404	French, Powhatan	Warren	62 00
55,137	Fry, J. H	Henderson	150 00
54,701	Forrester, Christopher C	Lincoln	165 00
54,429	Fox, Nelson, administrator of Calvin Fox, deceased	Sevier	45 00
55,978	Freeland, Mary J	Carroll	120 00
55,983	Foster, A. T	Giles	150 00
56,027	Fort, Willie	Hardeman	475 00
56,316	Finley, William H., deceased; Dorcas Finley, administrator.	Blount	194 00
56,422	Frazier, John	Bledsoe	105 00
56,423	Foster, A. J	Knox	243 75
53,737	Galbreath, James A	do	48 75
54,156	Grant, Isaac C	do	234 60
54,261	Gann, Anderson	Jefferson	3 00
54,402	Grizzard, A. C	Davidson	452 50
54,249	Green, Galen E	Madison	125 00
55,130	Goodwin, Samuel	do	475 00
49,623	Gordon, H. T., administrator	Maury	150 00
55,544	Glass, James W	Madison	332 25
55,543	Gaunt, Mrs. C. C., widow of George Gaunt	Lincoln	67 00
55,545	Gill, David, deceased; R. J. Hayes, administrator	Madison	892 50
55,852	Goodrich, Huston	Davidson	100 00
55,140	George, Gabriel and Amile, copartners and heirs at law of James George, deceased.	Jefferson	22 50
55,989	Gleaves, Elizabeth W	Davidson	200 00
55,995	Greer, J. L., deceased; J. L. Dillahanly, administrator	do	752 50
56,004	Graham, George W	Bledsoe	180 00
56,014	Gelkey, Robert C	Carroll	20 00
50,565	Grisham, Jane B., deceased; James B. Moore, administrator.	Rutherford	41 50
56,317	Gross, Asa	Grundy	54 50
56,258	Garnett, Mary Jane, deceased; William McDaniel, administrator.	Williamson	75 00
56,308	Gardner, W. P	Carroll	20 50
56,371	Gibson, Thomas P	Obion	180 00
56,428	Gibson, Reuben	Hamilton	37 50
56,369	Gray, Benajah	Davidson	125 00
56,456	Gass, James T.; M. M. Corbutt, administrator	Jefferson	143 00
56,457	Greer, Joseph H	McMinn	150 00
56,046	Graves, Rice, deceased; Reuben A. Graves, executor	Wilson	250 00
56,081	Givens, Samuel, estate of	Stewart	100 00
53,696	Hester, Thomas G	Lincoln	125 00
40,685	Harwell, Samuel B., deceased, by James Sevier, executor	Roane	34 00
54,423	Hodsden, Mary	Sevier	182 00
54,248	Houk, Adam	do	40 00
54,334	Henderson, Robert	do	200 00
54,566	Hancock, William, deceased, by J. H. and J. C. Hancock, executors.	Wilson	1,149 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	TENNESSEE—Continued.		
54, 547	Harlow, A.M., deceased, by Mary A. Harlow, administratrix	Giles	$260 00
54, 421	Hawkins, George A	Obion	685 00
54, 428	Hays, Richard W	Williamson	110 00
54, 403	Herman, Sylvanus	Sumner	570 50
54. 405	Hill, John B	Davidson	225 00
54, 457	Hodsden, Mary	Sevier	51 87
54, 398	Hogan, J. M	Stewart	110 00
54, 542	Hall, Drury, deceased, by S. S. Preston, administrator	Rutherford	375 00
54, 567	Hays, Stephen	Giles	400 00
55, 279	Hanserd, Martha M	do	290 00
55, 277	Hutchison, Samuel T	Davidson	60 00
54, 399	Harris, P. W., executor of W. P. Harris	Wilson	125 00
55, 450	Howard, Abraham	Coffee	334 37
55, 530	Haynes, Mrs. M. E., administratrix *de bonis non* of F. G. Haynes.	Sumner	1, 360 00
55, 528	Harrison, Francis M	Madison	120 00
55, 463	Hail, Powell E	Lawrence	125 00
54, 565	Hodges, Polly, executrix of William C. Hodges	Jefferson	192 00
54, 676	Hyde, A. A	Marion	430 50
54, 703	Harrison, J. M., administrator of Edmond Harrison	Shelby	457 00
55, 573	Howard, B. F	Madison	465 00
55, 452	Humphrey, R. W., deceased; M. W. Humphrey, administrator.	Montgomery	240 00
55, 454	Headrick, Elijah W., deceased; O. B. Headrick, administrator.	Greene	70 00
55, 613	Hammond, William H	McMinn	148 54
55, 644	Hill, Robert H	Williamson	535 00
55, 873	Hobson, H. P., administrator of Richard Cox, deceased	Fayette	4, 055 40
55, 941	Horn, W. R., deceased; J. A. Anderson, administrator	Shelby	400 00
55, 896	Hayes, Solomon, deceased; Nancy D. Hayes, administratrix	Giles	580 00
55, 967	Harmon, Adam	Coffee	170 00
55, 996	Hengham, Alex	Wilson	125 00
56, 009	Hurst, Andrew	Claiborne	30 00
56, 077	Hagler, Jacob C	Roane	26 25
56, 189	Hancock, Allen	Wilson	125 00
56, 128	Hughes, Mary	Smith	110 00
56, 182	Hatfield, James W	Sequatchie	225 00
56, 209	Hughes, Jesse E	Giles	129 00
56, 215	Harding, Alfred L	Sevier	31 00
56, 216	Hatcher, Elijah	do	21 42
56, 219	Hamlett, George D	Davidson	520 00
56, 193	Holland, William	Bledsoe	50 00
56, 256	Hardison, Anderson L	Gibson	130 00
56, 291	Hatmaker, Joseph	Campbell	31 00
56, 306	Hollingsworth, D. S	do	321 50
56, 337	Hurt, William I	Henry	1, 900 00
56, 353	Horne, David E	Giles	150 00
56, 266	Harvey, W. H	Gibson	115 00
56, 271	Hawn, Jacob	Knox	77 80
44, 871	Henry, Joseph, deceased; James S. McMinn, administrator	Guernsey	60 00
56, 372	Harris, Nathaniel	Blount	162 50
56, 115	Hadley, Drury P., deceased; F. C. Hadley, administrator	Williamson	255 37
56, 323	Hicks, Thomas J., deceased; A. W. Hitt, administrator	Davidson	365 05
53, 982	Jones, William C	Weakley	550 00
54, 331	Jenkins, Joseph, deceased, by J. W. Jenkins, administrator.	Wilson	100 00
54, 332	Johnson, Rachel	Sevier	180 00
54, 406	Johnson, Pleasant	Sequatchie	163 50
54, 530	Joseph, Alexander	Davidson	325 00
55, 276	Johnson, R. H. and James T	Meigs	20 00
55, 546	Johnson, Mrs. Sarah J	Davidson	400 75
56, 091	James, Alvah, deceased; Drury James, administrator	Jefferson	153 12
56, 113	Jones, Paul T	Hardeman	1, 929 00
56, 241	Jennings, W. C	Lincoln	500 00
56, 309	Jackson, James	Williamson	239 20
56, 323	Johns, Thomas	Rutherford	820 50
56, 346	Johnson, Allen R	Knox	262 00
56, 377	Jennings, Nancy	Wilson	80 00
52, 648	Kennedy, A. A	Blount	725 00
54, 463	Kelly, Adam L. and E. P	Marion	476 50
54, 463	Kelly, Ephraim	do	197 00
54, 529	Kannon, James, deceased, by Alfred Fleming, administrator	Maury	645 00
54, 417	Keel, Ezekiel T	Shelby	144 00
54, 546	King, L. A	Giles	205 00
54, 563	Kennedy, James (colored)	Davidson	175 00
55, 583	Knight, Silas S	Cheatham	125 00
55, 981	Keener, Adam H	Sevier	497 00
56, 074	King, Jesse	Carroll	47 50
56, 080	Kerr, Andrew	Hardin	100 00
56, 225	Kelly, Thomas	Montgomery	125 00
56, 184	Keitel, Conrad	Davidson	478 50

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	TENNESSEE—Continued.		
56,312	King, William R	Lawrence	$150 00
56,313	King, Wilson	Carroll	37 50
56,292	Kerr, James B	Hardin	18 00
45,190	Logue, Ephraim, deceased, by Harriet Logue, executrix	Maury	130 00
53,697	Lasiter, Sarah	Franklin	70 00
54,392	Lehy, John	Williamson	317 50
54,278	Lanius, James C	Wilson	470 00
54,531	Lee, Benjamin J	Giles	317 50
54,160	Lenoir, Kate Lenoir, Margaret Lenoir, Adelaide Carager, Julia L	Loudon	745 45
54,322	Lowe, Lunah W	Grainger	160 00
54,532	Lockridge, R. D., heir at law and guardian of other infant heirs at law of Joshua Darden, deceased.	Maury	412 50
55,569	Lady, John	Greene	110 00
55,570	Lee, Mrs. Mary A	Davidson	150 00
55,571	Lepe, J. M	Henderson	100 00
54,391	Lindsley, John B	Davidson	120 00
16,346	Lollar, Abram	Maury	250 00
56,054	Long, Elizabeth	Cannon	22 50
56,055	Liles, James	Knox	68 80
56,057	Lee, George W	Wayne	100 00
56,109	Lester, P. S	Wilson	567 68
56,176	Lewis, William	Cheatham	100 00
56,240	Lipe, G. W	Henderson	100 00
56,295	Leftwick, Ray, deceased; H. T. Gordon, administrator	Maury	125 00
54,134	McConnell, Joseph H	Blount	125 00
54,177	May, Mary W	Davidson	189 00
53,698	Melvin, William T	Wilson	315 00
54,199	McGuire, Terry, administrator of Martin McGuire, deceased.	Humphreys	600 00
54,415	McKinstry, William P., deceased, by J. W. McKinstry, administrator.	Fayette	225 00
52,950	Melvin, Edmond, deceased, by Melvin, Elizabeth, administratrix.	Davidson	122 50
54,435	McClendon, T. J	do	84 50
54,425	Morgan, Silas S	McMinn	33 75
54,461	McCown, M. W	Sevier	45 00
54,393	Moore, Alson G	McNairy	100 00
54,458	Moore, Thomas E	Hardeman	3,877 50
54,527	Miller, Charles, deceased, by J. C. Cawood and Andrew Miller, administrators.	Jefferson	290 00
54,408	Morgan, W. H. T., administrator of Thomas Morgan, deceased.	Davidson	285 00
55,444	Martin, Martha	do	629 00
55,547	McAdams, Elizabeth, administratrix of John A. McAdams, deceased.	Bedford	130 00
55,554	Marsh, M. S	Hardeman	60 00
55,556	McGavock, Margaret E	Williamson	2,348 50
55,584	Measle, Jacob	De Kalb	196 00
55,575	Matthews, Joseph E., deceased; W. C. McCaslin, administrator.	Madison	280 00
55,615	Malone, Joseph	Weakley	100 00
55,850	Moore, Millie	Wilson	100 00
55,494	Maxwell, William P., deceased; W. A. Maxwell, administrator.	Giles	425 00
55,585	Morrow, Randall, deceased; Harriet Morrow, administratrix.	Montgomery	180 00
55,954	Marks, Britain	Wilson	200 00
56,031	McCullock, Nathan C	do	540 00
56,069	Myler, William W.; R. B. Hurt, administrator	Madison	375 00
56,078	Moorman, Charles W	Davidson	155 00
56,218	Martin, William, deceased; J. H. Crockett, administrator	McMinn	100 00
56,221	McAnally, J. E. M	Wayne	52 00
56,243	Major, William	Knox	459 30
56,239	Marable, Benjamin, deceased; Henry J. Prater, surviving administrator.	Rutherford	993 00
55,557	McAnnally, Elisha B., deceased; J. H. Call, administrator	Wayne	172 50
56,257	Morgan, James	Knox	40 00
56,280	Mathis, Sarah P	Carroll	125 00
56,319	Maynard, Steth	Madison	75 00
56,345	Meyers, Henry	Blount	222 00
56,348	Manier, Philip H	Bedford	398 00
56,331	McDaniel, Fanny E	Lincoln	100 00
56,329	Miller, John W	Obion	140 00
56,431	Mitchell, Winney	Carroll	167 50
53,758	Noe, John F., deceased, by D. J. Taylor, surviving administrator.	Grainger	255 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	TENNESSEE—Continued.		
54, 188	Neal, Ashley	Wilson	$360 00
55, 284	Norris, Tilman	Simpson	250 00
55, 548	Nelson, Robert	Lawrence	225 00
55, 558	Neisler, Barbary, deceased; W. J. Thompson, administrator	Hardeman	140 00
55, 937	Neilson, A. D., deceased; D. E. Durrett, administrator	do	345 00
55, 997	Nash, G. R., deceased; G. R. Nash, administrator	Rutherford	125 00
56, 195	Nichols, William W	Madison	200 00
56, 380	Needham, George B	Claiborne	110 00
56, 531	Neely, Isaac G	Williamson	498 00
55, 587	Overton, E. W	do	90 00
56, 114	Owens, Jacob	Wilson	100 00
50, 377	Peyton, Rufus H	Maury	169 00
54, 339	Parham, Sylvia W	do	52 00
54, 419	Patrick, Thomas G	Hardeman	225 00
54, 582	Parham, Theophilus	Henderson	125 00
54, 433	Parham, Richard H., jr	Hardeman	575 00
55, 447	Parsons, Benjamin S	Bedford	125 00
54, 869	Petree, George W	Campbell	60 00
55, 577	Pollard, Doctor F	Sevier	23 00
55, 561	Puckett, Lucien A	Wilson	125 00
55, 617	Parham, Sylvia W	Maury	57 00
56, 029	Phillips, W. S	Wilson	365 00
56, 214	Parsons, Daniel	Sevier	86 46
56, 183	Patterson, William C	Wilson	250 00
56, 383	Porter, Rees W	Giles	110 00
56, 458	Price, Alexander, deceased; F. A. Henninger and John Price, administrators.	Bledsoe	481 50
56, 529	Potts, W. R	Dixon	100 00
56, 344	Perry, William	Wilson	158 00
55, 129	Petway, Ferdinand H	Davidson	63 00
	J. T. Carlton and Lelia Carlton, formerly Lelia Petway	do	63 00
	Nick Malone, guardian for William and John Petway	do	126 00
54, 491	Queen, James C	Wayne	125 00
53, 741	Redmond, Young W	Williamson	1, 000 00
53, 692	Rhea, James	Meigs	3, 290 00
54, 116	Russell, John	Sevier	70 00
54, 401	Rucker, John W	Davidson	230 00
54, 263	Reneau, Michael	Jefferson	81 00
54, 250	Rentfro, James W	McMinn	510 00
54, 427	Roberts, John T	Weakley	278 00
55, 280	Ramsey, John L	Meigs	1, 440 00
54, 720	Rowland, Virginia F., administratrix of W. J. Rowland, deceased.	Montgomery	125 00
54, 792	Rankin, Daniel H	Obion	150 00
54, 870	Rutherford, Thomas R	Wilson	500 00
54, 872	Rutledge, Matthew	Shelby	125 00
55, 588	Roberts, Andrew J	Wayne	250 00
55, 859	Robnett, Allen	do	76 00
55, 657	Rose, A. H	Hardeman	342 00
55, 875	Rutherford, Thomas P	Knox	125 00
56, 129	Ramsey, William, jr	Warren	125 00
56, 132	Robnett, Jeremiah R	Wayne	100 00
56, 177	Rogers, George M	Humphrey	622 00
56, 210	Rutledge, David	Shelby	250 00
56, 011	Reid, Alexander	Williamson	289 50
56, 236	Rushing, Joel	Madison	160 00
56, 263	Randle, William T	Shelby	240 00
56, 226	Reed, Catharine	Washington	80 00
56, 349	Rule, Frederick	Knox	105 00
56, 385	Russell, Wiley	Wilson	467 50
56, 433	Ransom, J. R. T	Marshall	220 00
56, 435	Rigsbee, Ruffin J	Sumner	381 00
56, 436	Rogers, David W	Claiborne	135 00
55, 897	Redman, Valentine, deceased; Jane Redman, administratrix	Hardy	225 00
53, 940	Smalling, A. G	Sullivan	105 00
54, 108	Sims, William E	Sevier	100 00
54, 218	Sheilds, James M	Giles	235 00
54, 390	Smith, Mary	Fayette	756 50
54, 328	Shaw, Abner T	Davidson	305 00
54, 400	Shaffer, R. W	do	1, 635 00
54, 411	Slaydon, William	Jefferson	64 00
54, 573	Smith, C. C., administrator of Alex. Simmons, deceased	Wilson	211 10
54, 750	Sawyer, J. G	Davidson	156 00
54, 790	Stump, Philip S	do	650 00
54, 791	Smith, Joseph	Wilson	100 00
55, 618	Skinner, A. W	McNairy	100 00
55, 953	Schimmler, John, deceased, M. A. Schimmler, administrator	Davidson	950 00
55, 478	Slinkhard, Nicy	do	150 00
55, 9[illegible]7	Smith, Josiah	Wilson	250 00

Schedule of claims—Continued.

No.	Name of claimant.	County.	Allowed.
	TENNESSEE—Continued.		
56, 094	Sykes, Catharine	Lincoln	$100 00
56, 163	Shultz, F. J	Sevier	100 00
56, 205	Scales, A. G	Williamson	1, 268 40
56, 211	Savely, Samuel, deceased; John G. Stuart, administrator	Sumner	150 00
56, 220	Stammer, Anderson	Bedford	100 00
56, 178	Sweat, William, deceased; W. I. Sweat, administrator	Campbell	146 00
56, 223	Stafford, Jesse	Sevier	175 50
56, 252	Stone, Iredell	White	110 00
56, 254	Spears, Peter	Bledsoe	125 00
56, 290	Smith, Edward J	Carter	100 00
56, 267	Swink, W. L	Gibson	24 00
56, 440	Stout, Isaiah	Shelby	50 00
56, 461	Sharp, James, sr	Scott	281 03
54, 410	Sykes, James, deceased; W. H. Hagan and W. H. Sykes, administrators.	Lawrence	1, 080 45
55, 460	Thompson, T. D	Bedford	75 00
55, 126	Thompson, Richard	Wilson	600 00
55, 645	Taylor, Thomas, deceased; Rebecca F. Taylor, executrix	Fayette	630 00
55, 848	Thompson, William	McMinn	155 00
55, 939	Thompson, Moses C. R	Rhea	19 00
55, 950	Thompson, Susan	Henderson	290 00
56, 033	Terry, John B., deceased, Martha C. Terry, widow	Carroll	75 00
56, 174	Tadlock, Andrew N	Washington	90 00
56, 284	Tedford, Joseph H	Blount	110 00
56, 185	Trice, W. C	Henderson	100 00
55, 942	Thomas, James, deceased; James Thomas, jr., and Champ Thomas, executors.	....do	475 00
54, 752	Vaugh, Peter B	Trousdale	2, 125 00
53, 679	Williams, Turner	Davidson	375 00
54, 042	Wells, R. J	Marion	55 20
33, 074	White, L. B	Rutherford	363 80
54, 262	Walker, James C	Sevier	360 00
54, 211	Woods, James C., administrator of James A. Woods	Davidson	346 00
48, 224	Walker, James H., administrator of William M. Ferran	Hawkins	125 00
55, 527	Woodrough, James	Weakley	135 00
55, 451	Wilhoit, Sarah E., administratrix, John Wilhoit	Bedford	250 00
55, 531	Warren, Henry	Lincoln	200 00
54, 739	Winstead, W. W	Davidson	135 00
54, 749	Wright, Isaac B	Wilson	260 00
55, 127	Ward, Mary	Harrison	125 00
55, 550	Wilkes, Washington L. J	Marshall	355 00
55, 620	Wood, John J	Shelby	250 00
55, 660	White, Benjamin W	Giles	135 00
55, 876	Wilkinson, Alonzo	....do	90 00
55, 899	Whitworth, M. C. and E. D	Davidson	247 00
53, 924	White, William, by Thomas C. Lind, administrator	Warren	307 72
55, 982	Welcker, Margaret P., and Lizzie W. Turner (formerly Welcker), heirs at law of James M. Welcker, deceased.	Knox	2, 745 10
56, 018	Workman, Pleasant J	Weakley	135 00
55, 456	Widner, William, deceased, Jos. K. Gibson, administrator	Knox	284 75
56, 130	Waters, Thomas	Wilson	125 00
56, 213	Wheeler, Joel, deceased; J. R. Wheeler, administrator	Sequatchie	538 50
56, 227	Waller, Pierce, deceased; John R. Waller, administrator	Davidson	597 50
56, 224	White, Alexander	Knox	212 00
56, 244	Whitfield, W. F	Madison	228 00
56, 281	Webb, David	Blount	75 00
56, 293	Windler, Henry	Shelby	135 00
56, 325	Wilson, Andrew J	Blount	29 89
56, 463	Wagstaff, Ellen, formerly Ellen Ussery	Giles	135 00
54, 679	Williams, Robert; Samuel M. Williams, administrator	Loudon	288 75
	Williams, Samuel M., in his own right	....do	423 70
55, 905	Wadley, Samuel J., deceased; Edward Ganaway, administrator.	Davidson	150 00

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. 11, Part 2.

CLAIMS ARISING UNDER ACT OF JULY 4, 1864.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Report of the Quartermaster-General in relation to the claims arising under the act of July 4, 1864.

DECEMBER 13, 1880.—Referred to the Committee on War Claims and ordered to be printed.

WAR DEPARTMENT,
Washington City, December 11, 1880.

SIR: The Secretary of War has the honor to transmit to the United States House of Representatives a copy of a report from the Quartermaster-General of the Army respecting claims pending in his office on account of the act of July 4, 1864, and acts amendatory thereof. The report shows, among other things, that the act of March 3, 1879, prescribing a limitation (ending January 1, 1880) for filing such claims, has caused an extraordinary increase in the number of claims in the Quartermaster-General's Office, with corresponding increase of public demands for settlements. These demands cannot be satisfactorily met until Congress affords further means to that end, and the means deemed necessary for the time between this date and July 1, 1882, in so far as this department is concerned are—

1. An appropriation of $50,000, to be immediately available for use during the remainder of the current fiscal year, and of $100,000 in addition to amounts of estimates already submitted for the next fiscal year, to pay salaries and expenses of additional agents and clerks necessary to examine such claims.

2. An appropriation of $1,500, to be immediately available, "for contingent expenses Quartermaster-General's Office, 1881," the same to be used in fitting up additional rooms, purchase of furniture, and for furnishing stationery necessary for an increased clerical force.

3. An amendment of section 300 A, Revised Statutes, second edition, to substantially enact: That all claims submitted to the Quartermaster-General of the United States under the provisions of an act of July 4, 1864, and amendatory acts, which he has caused to be examined, and which are awaiting his action at any time, may be examined by any military officer designated by the President for the duty, and if said officer is "convinced that the claim is just, and of the loyalty of the claimant, and that the stores have been actually received or taken for the use of and used by the Army," he shall certify such facts to the Quartermaster

General, who shall thereupon be relieved from any further examination of that claim, and shall report the case to the Third Auditor of the Treasury with recommendation for settlement: *Provided*, That nothing in this act shall be construed to prevent the suspension or rejection of any of said claims found to be not just or not properly supported in proof of loyalty.

It is recommended that the means above suggested be granted by Congress, and that the law be further so amended as to provide for an appeal to the Secretary of War in cases where questions of law are alone involved.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
Of the House of Representatives.

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., December 1, 1880.

SIR: I have the honor to acknowledge receipt of your letter of the 26th instant, calling for certain information regarding claims pending in this office under the act of July 4, 1864, and acts amendatory thereof, whether an increased force of temporary clerks to be employed specially on the work of these claims is desirable, and what additional amount of appropriation for incidental expenses for the fiscal year ending June 30, 1881, can be allotted for the work on these claims without impairing other interests of the service.

I have the honor to report on the several specific inquiries made as follows:

1. The limitation of the act of July 4, 1864, providing for the settlement of claims of loyal citizens, which expired by law January 1, 1880, has thrown upon this office a largely increased amount of labor, for the proper and speedy performance of which the present clerical force is inadequate.

Prior to the passage of the statute of limitation of March 3, 1879, the average number of claims received annually in this office is shown to have been 3,150. The average number received during the ten years from 1868 to 1878, inclusive, was 1,315 per year.

2. The number of cases presented during six months from July 1, 1879, to January 1, 1880, including the Indiana Morgan raid cases and claims from Pennsylvania, is 12,757, amounting to $7,527,051.56.

The later claims filed are unlike the majority of those filed earlier, in that they are not accompanied by official vouchers, receipts, or certificates of officers of the Army as to the merits of the charges made.

This lack of official proof renders the investigations more tedious and difficult, and much testimony is accumulated in reaching results.

3. The number and amount of unsettled claims filed and undergoing official examination and preparation for my action may be stated in round numbers at about 5,000, amounting to about $2,725,000.

4. The number and amount of claims filed which have not yet been taken up for examination, including, however, those in the hands of officers for investigation, but not yet investigated, approximate 16,500 cases, calling for about $8,662,500.

5. The number of claims now about ready and awaiting my individual action as Quartermaster-General, is 2,150, approximating in amount the sum of $1,129,275.

The total of the above is 23,650 cases; the amount is over $12,500,000.

The number of such cases ready for my final action, and for report to Congress on December 1, 1879, was 2,000. Since that date I have decided 2,449 cases.

6. The pressure of claimants, attorneys, and representatives for information regarding condition and for settlement of these claims is very great. To meet this pressure, at least so far as answering the voluminous correspondence on the subject, an increase in the number of *male* clerks is desirable. At least ten additional clerks, if good, accurate, and rapid penmen, could be profitably employed on the work.

7. The cost of investigations of these claims during the last fiscal year, including cost of services of clerks employed in briefing the evidence, reports, &c., was $132,158.23, of which $74,158.23 was charged to appropriation for incidental expenses; most of the remainder to transportation.

No more money than now is can be allotted to this duty from the appropriation for incidental expenses of the Army for the next fiscal year ending June 30, 1881.

The present monthly estimate for funds from appropriation for "incidental expenses" is $9,175, which itself cannot be continued to June 30, 1881, without additional appropriation. The Army is already complaining that its allowance from this appropriation is insufficient.

The estimated amount of additional appropriation on account of "incidental expenses" necessary to continue this work without interruption until June 30, 1881, at the cost of the present force, is $40,000. Ten additional clerks for this service, at $1,000 per year, for one year, will cost $10,000.

The number of cases investigated and reported on by officers and agents during the last fiscal year was 3,267, costing for services and expenses of agents employed in making the investigations the sum of $98,971.85, which is equivalent to an average of a little over $30 for each claim. At the same rate of time and cost it will require about five years and $495,000 to investigate the 16,800 claims not yet investigated, amounting to over $8,500,000.

Much expense can be saved by hastening the work of investigations required to be made by agents. If Congress should be requested to make any additional appropriation for the purpose of hastening this work, I think it would be wise to make the estimate therefor large enough to warrant the employment of a sufficient force of agents to increase the number of investigations to at least double the number made during the past fiscal year.

In preparing these claims for my decision, an examination by the Third Auditor of returns and accounts of officers is necessary in each case. Verification of signatures, receipts, to *ex-parte* affidavits, &c., are made at the Second Auditor's Office, and frequent calls are made upon the Adjutant General's Office.

It requires from three to six months to obtain replies to calls made upon the Auditors of the Treasury for information. These calls cannot be made conveniently nor intelligently until after the case has been investigated by the agents.

While, therefore, a large increase of agents and of the clerical force in this office may result in pushing forward the examination and preparation of cases so far as the work thereon is under control of this department, such increase here will not relieve the embarrassment under which the Treasury Department labors.

The Quartermaster-General cannot find sufficient time in the midst of his other duties to personally examine for final decision under the law

these cases as fast as they are prepared for him by the present force, so long as the law remains as it is at present, requiring the Quartermaster-General himself to examine and report upon each case presented to him, it is not believed that much more than the usual annual number of cases can be finally disposed of.

Twenty-three thousand six hundred and fifty cases is a very large docket for one judge or arbitrator.

Very respectfully, your obedient servant,

M. C. MEIGS,
Quartermaster-General, Bvt. Maj. Gen., U. S. A.

To the Hon. SECRETARY OF WAR.

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., December 3, 1880.

SIR: Referring to my letter of the 1st instant, in relation to the appointment of additional clerks to facilitate the settlement of claims now on file in this office, I would respectfully state that if the recommendations therein are approved and the clerks authorized, additional rooms will have to be fitted up and office furniture and stationery supplied for their accommodation.

I have the honor, therefore, to submit for that purpose the accompanying deficiency estimate of $1,500 for "Contingent expenses of the Quartermaster-General's Office" for the current fiscal year ending June 30, 1881.

Very respectfully, your obedient servant,

M. C. MEIGS,
Quartermaster-General, Bvt. Maj. Gen., U. S. A.

To the Hon. SECRETARY OF WAR.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1881, *by the office of the Quartermaster-General, United States Army.*

[See Revised Statutes, title 41, page 725, sections 3660 to 3671, and Statutes, pamphlet edition, chapter 129, page 370, section 3, act of March 3, 1875.]

General object (title of appropriation).	Detailed objects of expenditure, and explanations.	Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large or to Revised Statutes.			Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1881.
			Vol. or R. S.	Page.	Sec.		
Contingent expenses Quartermaster-General's Office.	Stationery, office furniture, repairs, and miscellaneous items.	Appropriated June 15, 1880.	20	195	1	$1,500	$8,000

NOTE.—This estimate is made for the purpose of supplying stationery and office furniture, and fitting up necessary rooms, should the additional clerks recommended by the Quartermaster-General to expedite the settlement of claims in the Quartermaster-General's Office be authorized and appointed.

Respectfully submitted.

M. C. MEIGS,
Quartermaster-General, Brevet Major-General, U. S. A.

QUARTERMASTER-GENERAL'S OFFICE, *December* 3, 1880.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 14.

INTERCHANGE OF DOCUMENTS WITH THE CHAMBER OF DEPUTIES OF THE FRENCH REPUBLIC.

LETTER

FROM

THE SECRETARY OF STATE,

TRANSMITTING

A communication from M. Léon Gambetta, President of the Chamber of Deputies of the Republic of France, in relation to an exchange of documents between that body and the House of Representatives of the United States.

DECEMBER 10, 1880.—Referred to the Committee on Foreign Affairs and ordered to be printed.

DEPARTMENT OF STATE,
Washington, December 7, 1880.

SIR: I have the honor to transmit herewith for your information a translation of a letter, dated the 22d of July last, from Mr. Léon Gambetta, President of the Chamber of Deputies in France, to the American minister at Paris, in relation to the establishment of an exchange of documents between the Chamber of Deputies of the French Republic and the corresponding legislative body in this country. In accordance with Mr. Gambetta's request, I inclose a letter addressed to the President of the House of Representatives of the American Republic, and I likewise forward a package of documents which accompanied the letter just named.

I have the honor to be, sir, your obedient servant,

WM. M. EVARTS.

Hon. SAMUEL J. RANDALL,
Speaker of the House of Representatives.

Inclosures.

1. Mr. Léon Gambetta to the minister of the United States in France, dated July 22, 1880—translation.
2. A sealed letter addressed "Monsieur le Président de la Chambre des Représentants de la République Américaine."

Accompaniment: A package of documents.

[Translation.]

CHAMBER OF DEPUTIES (PRÉSIDENCE),
Paris, July 22, 1880.

SIR: Exchanges of parliamentary documents have for a long time been organized betwéen the political assemblies of most of the European states.

I believe it would be useful to establish analogous exchanges between the Chamber of Deputies of the French Republic and that of the American Republic. In consequence I have the honor to address to you a case containing what has been published by the French Parliament during the session of 1880.

I would be obliged to you if you would please forward this case, together with the inclosed letter, to the President of House of Representatives of the American Republic.

Accept, Mr. Minister, the assurances of my high consideration,

LÉON GAMBETTA,
President of the Chamber of Deputies.

The MINISTER
Of the United States in France.

CHAMBRE DES DÉPUTÉS (PRESIDENCE),
Paris, le 22 juillet 1880.

Monsieur le PRÉSIDENT: Des échanges de documents parlementaires ont été, depuis longtemps, organisés entre les assemblées politiques de la plupart des états européens.

Je crois qu'il serait utile d'établir des échanges analogues entre la Chambre des Députés de la République Française et celle de la République Américaine. En conséquence j'ai l'honneur de vous adresser une caisse contenant tout ce qui a été publié par le Parlement Français pendant le cours de la session ordinaire de 1880. Je vous serais reconnaissant si vous vouliez bien me faire expédier, par réciprocité, les documents publiés pendant la même année, par les ordres de l'Assemblée que vous présidez.

Agréez, Monsieur le Président, les assurances de ma haute considération.

Le Président de la Chambre des Députés,

LÉON GAMBETTA.

Monsieur le PRÉSIDENT
De la Chambre des Représentants de la République Américaine.

CHAMBRE DES DÉPUTÉS (PRÉSIDENCE),
Paris, le 20 juillet 1880.

Bordereau des publications faites pendant le cours de la session ordinaire de 1880, *offertes par la Chambre des Députés de la République Française.*

9. Tomes 1, 2, 3, 4, 5, 6, 7, 8, 9 des annales de 1879.
1. Procès-verbaux de la Commission des Douanes.
1. Rapports de la Commission des Douanes.
1. Table analytique de l'Assemblée Nationale.
1. Budget de 1881.
1. Compte définitif des recettes et dépenses, Exercice 1875. (Manque.)
1. Compte général des finances, Exercice 1876.

1. Comptes définitifs: Dépenses des ministères, Exercice 1875.
1. Affaires d'Égypte.
1. Rectification des frontières de la Grèce; Reconnaissance de la Roumanie; Commission technique européenne.
1. Comptes définitifs: Dépenses—Guerre (manque), Marine (manque), Algérie, Exercice 1874.
1. Comptes définitifs: Dépenses—Guerre (manque), Marine (manque), Algérie, Exercice 1875.
1. Rapport de la cour des comptes, Exercice 1874.
1. Règlement de la Chambre des Députés, édition 1880.

N. B.—Les objets marqués manquants sont épuisés.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 15.

SANDY HOOK BAR.

LETTER

FROM

THE SECRETARY OF WAR,

RELATIVE TO

The channel of Sandy Hook Bar.

DECEMBER 17, 1880.—Referred to the Committee on Commerce.
DECEMBER 22, 1880.—Recommitted to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, December 15, 1880.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, in response to a communication from that committee, dated June 5, 1880, inclosing a copy of H. R. 3042, Forty-sixth Congress, second session, being "A bill to create a permanently deep, wide, and straight channel through the Sandy Hook Bar of the port of New York, for the purpose of forming an improved commercial outlet," and requesting information in regard thereto, a copy of a report upon the subject by the Board of Engineers for Fortifications and for River and Harbor Improvements, dated November 30, 1880, which is believed to afford the information desired by the Committee on Commerce.

In the absence, and by direction, of the Secretary of War,

H. T. CROSBY,
Chief Clerk.

The SPEAKER
of the House of Representatives.

REPORT OF THE BOARD OF ENGINEERS.

OFFICE OF BOARD OF ENGINEERS FOR FORTIFICATIONS,
AND FOR RIVER AND HARBOR IMPROVEMENTS, &C.,
New York, November 30, 1880.

GENERAL: The Board of Engineers for Fortifications and for River and Harbor Works, to whom was submitted from the office of the Chief of Engineers, of date June 10, 1880, certain papers relating to a project for creating a permanently deep, wide, and straight channel

through the Sandy Hook Bar of the port of New York, for the purpose of forming an improved commercial outlet, have the honor to report as follows:

House bill 3042, Forty-sixth Congress, second session, stating in the title the object as above described, was transmitted to the honorable Secretary of War from the Committee on Commerce of the House of Representatives for consideration of the practicability of the plan on which the proposed improvement is based. And inasmuch as the bill did not set forth or sufficiently explain the project of the originator, Mr. Henry F. Knapp, civil engineer, it was suggested by the Chief of Engineers in his letter committing the subject to the Board, that Mr. Knapp be invited to offer such information regarding his plan as would enable the Board to give it due consideration, with the view of complying with the requirements of the Committee on Commerce. This having been done, Mr. Knapp forwarded to the Board a communication, marked A, dated August 3, 1880, and appended to this report. Subsequently, after an interview with the Board, in which the plan was discussed, he submitted another paper, marked B, of date of October 21, 1880, also appended.

The project as delineated on the Coast Survey chart of 1875, and further described in the papers submitted, is a wall extending partly across the entrance to the harbor in deep water outside the bar, the top varying from 40 to 71 feet below mean low-water. The plan of the wall is a circular arc 5 miles and 950 yards long, presenting its convexity to the bar and described with a radius of 11 miles. The general direction is W. S. W. $\frac{1}{4}$ W. The extremities are held at considerable distances from the shores of Long Island and of New Jersey, and the wall is founded in a depth of 10 fathoms at its N. E., and of 16 fathoms at its S. W. end. The structure may be increased or diminished in length according to the effect produced, and it is intended by the originator to maintain a channel 31$\frac{1}{2}$ feet deep at mean high-water, and 500 feet at least in width by the means of the wall alone without resort to dredging, to shutting off any existing channel, or to decreasing the present width of the entrance.

The height as prescribed by the originator would, in his opinion, permit the largest class of vessels to pass over its top without striking, and he claims furthermore that it will act as a breakwater behind which vessels could anchor in as perfect security from the force of the waves as in the space behind the bar.

Mr. Knapp enumerates three influences at work by which the bar is retained in its present position, extent, and depth, viz: 1st, the force of the sea waves acting on the sandy bottom outside the harbor to heave sand into the mouth and close it up by forming a bar across it. 2d, the force of the outflowing currents antagonistic to the first named, and cutting out the channel. 3d, the littoral or shore currents which sweep across the harbor outside the bar at the rate, as stated by him, of from 1 to 2$\frac{1}{2}$ knots per hour, and supposed to be most effective in sweeping away from the outside of the bar all sedimentary matter brought out of the harbor by the outflowing currents, as well as excessive accretions of sand to the bar brought in by wave action.

Mr. Knapp also states that the force of the outflowing currents is in excess of the influence of the waves which tend to keep up sand in the bar, and he intends by the construction of the wall to cut down the waves to such extent that their action in moving sand from the deep water and depositing the same upon the bar will be so much diminished that the effect of the outflowing currents being relatively increased, a greater depth of water will be obtained and maintained.

His theory of the eroding action of the waves appears to be that it penetrates to the greatest depth, and that by it during great storms the bed of the sea has been excavated to its present depth and the *débris* deposited upon shoals, thus forming the boundaries and shores of the ocean, and upon this theory he supposes a constant transportation of sand, &c., from deep waters to the shoaler outlets of bays and rivers and a steady accumulation of materials from this cause upon bars.

In his paper, Appendix B, the author is not clear in his meaning, apparently making no distinction between waves of oscillation merely and those of translation, and thus rendering it difficult to follow or comprehend his ideas of wave action. The treatment of the subject generally has not had the effect of lightening the labors of the Board by confining the discussion to particular points, and it is therefore necessary to take up the question in the most general sense, viz, whether the wall as proposed in this scheme of improvement would have the effect of deepening the water on the bar.

In the first place the wall will collect on its N. W. face the material borne from the bar by the outgoing currents, and upon the S. E. face an accumulation will follow from the action of the flood-tide and, during severe storms, from wave action. And the gentle slope upon the outside will be favorable to the passage of waves over the wall without breaking.

No oceanic currents were detected by the observation of the Coast Survey at a point E. S. E. from Sandy Hook and distant about 60 miles; but regular tidal currents nearly as strong as at the light-ship were found. In 1879 the Coast Survey observed on the line between Nantucket and Delaware Bay only a small tendency to a S. W. current, scarcely $\frac{1}{2}$ knot per hour.

The supposed littoral current off Sandy Hook with power sufficient and in the proper direction to scour the foot of the wall clear of accumulations has not been verified.

That the waves exercise a potent influence both upon the volume and shape of the bar at Sandy Hook cannot be disputed, and it is equally certain that if the wave action could be eliminated the volume of the bar would be limited to the bulk of the material moved by the tidal currents and retained under the operation of their joint influence, and it would be spread to a greater length seaward. What the depth over the bar might finally be would be a matter of speculation; but a bar would still exist due to the diminished scour of the currents expanding as they became released from the confinement of the land. Numerous bars and shoals exist in interior bodies of water not exposed to wave action, resulting solely from an undue expansion between banks.

The first matter to be investigated in discussing the present scheme of improvement, is the extent to which wave action would be eliminated by the construction of the proposed wall, which is to be located about 3 miles outside of the bar and not far from midway between the coasts of New Jersey and Long Island; of which interval its length would embrace about one-third part, leaving two large spaces not closed by any structure: the one between the southwesterly end and the coast of New Jersey, the other between the northeasterly end and the coast of Long Island.

At the present time it is well known that *in these spaces*, where the water is shoaler than at the proposed location of the wall, a considerable action upon the bottom and shore lines exists both of waves and currents, by means of which large amounts of sand are transported from the outside and lodged upon the bar and upon interior areas, from which a

portion is brought back by the ebb currents to the bar. The growth and changes of the peninsula at Sandy Hook, and the movements of the shore line of Long Island, furnish occular evidence of these powerful sand-transporting agencies.

A glance at the topography of the bottom as delineated on the Coast Survey charts shows the exterior slope of the bar to be in a direction nearly north and parallel to the general line of Sandy Hook, until the beach of Coney Island is approached, when this direction is broken by a wide, long and deep indentation to the westward, extending so far as to leave but a narrow bulkhead to be surmounted before reaching the deep water of the interior bay. The topography proves the existence of two distinct eroding and transporting influences affecting the bar, one to the northward along the coast of New Jersey, the other westward along the coast of Long Island.

Another agency which would also be unaffected by the wall is the flood-tide eroding and transporting materials to the bar and interior waters, and also modifying the shape of the bar. In these effects it is much aided by the stirring up of the bottom, by the breaking waves and the currents due to waves of translation.

Having enumerated the influences at work in transporting sand from the outside to the bar and interior spaces which would not be diminished by the construction of the wall, there remains to be discussed only the modification or elimination of wave action upon the bottom over the area supposed to be controlled by the wall. Obviously the wall could effect that end only by breaking the waves.

The condition of leaving a sufficient depth of water between the surface and the top of the wall and at the same time of retaining a sufficient height of the wall to break up the seas are now to be discussed, and the compatibility of these requirements, upon which the practical application of the system depends, should be rigidly tested.

Great differences exist in the strength of the wind and its effect upon the force and height of the waves, as distinguished by the terms severe gales, storms, and great storms. While the former may occur one or more times during a single winter, storms are rare, and great storms may not visit a locality more often than once in twenty years.

In designing works of construction upon the seacoast, the engineer, it is true, must endeavor to make them proof against the force of waves due to the severest storms, but, for the case now discussed, the great waves due to hurricanes and all storms of rare occurrence need not enter at all in the estimated effect upon the bar, since it is manifestly the influence of waves of frequent occurrence which would be potent in determining the depth and other features of the bar. Although it is proper to omit all consideration of unusually high waves as of rare occurrence, and therefore impressing no permanent features on the bar, it is nevertheless curious as a matter of fact that old pilots of thirty-five years' experience on the bar have not noticed even a transient decrease of draught produced by severe storms.

The question is therefore reduced to the effect of the proposed structure upon the more moderate classes of waves.

Measurements at this place of the heights of waves, ordinary or extraordinary, if ever accurately made, do not appear to have been recorded, and it is impossible, therefore, to be exact in drawing the line between waves of frequent and those of infrequent occurrence, but it is probable that an assumed height of about 16 feet would not be far from such dividing line. With few or no exceptions waves of oscillation of 16 feet and less could pass over the top of the proposed wall without

breaking or suffering serious modification. Waves of translation, as ground swells, which are the precursors or followers of gales, being of less height than the wind waves of the same storm, would pass over as well as those before mentioned. The tide wave would also pass, suffering but an imperceptible retardance in time.

The wall would have, therefore, little or no effect in arresting waves which affect the bar.

To sum up: The proposed wall will leave long intervals between its flanks and the adjoining shores, through which a vigorous wave-and-current action affecting the bar will be exercised. It will also permit the free influx of the flood tide, over it and on either side, to operate upon the bar, and, finally, it will not arrest those classes of waves which are most instrumental in defining the depth and shape of the bar.

The supposition that the proposed wall will form behind it a harbor of refuge as secure as that behind the bar was framed upon the idea that the waves would be as much reduced by a wall 40 feet under water as by the much shoaler mass of the bar.

After a careful examination of this scheme, the Board are of the opinion that the proposed wall will not improve the navigation over the bar or form a secure harbor of refuge for any class of vessels.

Respectfully submitted.

Z. B. TOWER,
Col. of Engineers, Bvt. Maj. Gen'l.
JOHN NEWTON,
Col. of Engineers, Bvt. Maj. Gen'l.
HENRY L. ABBOT,
Lieut. Col. of Engineers, Bvt. Brig. Gen'l.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

LETTERS OF MR. HENRY KNAPP, CIVIL ENGINEER.

A.

NEW YORK, *August* 3, 1880.

GENERAL: I respectfully offer to the consideration of your Board the following argument and explanation of proposed improvement to the channel of New York Harbor referred to in bill H. R. No. 3042, Forty-sixth Congress, second session, and pray that the bill may be also taken as a part of this paper.

The bill is entitled "A bill to create a permanently deep, wide, and straight channel through the Sandy Hook Bar of the port of New York for the purpose of forming an improved commercial outlet," and is referred by the honorable Secretary of War to your Board for consideration as to its practicability.

The proposed work and improvement is based on the three forces or currents existing at the mouth of this port, viz: first, the force of the sea waves acting on the sandy bottom outside the harbor to heave sand into the mouth and close it up by forming a bar across it; second, antagonistic to this current or force is the force of the outflowing currents which cut out the bar and channel, undoing the work of the first-named force, and alone prevents the force resulting from wave action from entirely closing up the mouth by building the bar up into an unbroken beach entirely across the mouth, and so creating a *terra firma* between the shores of New Jersey and Long Island; the third force is the littoral or shore currents, which sweep across the harbor outside of the bar at a rate varying from 1 to 2½ knots per hour, and are most effective in carrying away from the outside of the bar all sedimentary matter brought out the harbor by the out flowing currents as well as excessive accretions of sand to the bar brought in by wave action. These three powers are all that exist at the mouth of this harbor, and all of them must be taken into consideration for any improvement of this entrance to New York Harbor.

The plan by which I propose to take advantage of these three currents and forces to permanently deepen, widen, and straighten the channel of this port is to build an

artificial bar of stone located (as shown on the accompanying chart) outside the natural bar, and submerged so deep below the surface of low-tide that the heaviest draft ships may with perfect safety and ease pass over any part of it in coming in and going out of the harbor at any state of the tide or weather.

The effect of this artificial bar is to destroy or absorb a great part of the power of the seawaves, thereby reducing their ability to build up the natural bar by carrying sand onto it, while at the same time the outflowing currents maintain their full original force to cut the bar down; in other words, there is immense power inherent in each of these two antagonistic forces, and by reducing the force of one the developed force of the other becomes increased. Such will be the effect and consequence of an artificial bar of stone located as shown to break down the force of wave action; but if the artificial bar was built of sand it would quickly be thrown in onto the natural bar, but being of heavy stone, built in a shape and manner designed to resist any force that can beat against it on this coast, it will become immovable. It will be observed that this plan for improving the channel of this port, based on these two opposing forces alone, would be permanently effective, but the third force, or shore currents, renders assurance doubly sure, inasmuch as it is a great auxiliary and will scour both in front of and behind the false bar, with all the effect it had originally on the bottom and carry away all sedimentary deposits on the inside and sand accretions on the outside; this third force is the great scavenger of the outer harbor, while the outflowing currents perform that duty for the inner harbor. The natural sand bar may be said to be the battle-ground of the two first-named forces, and is situated so far inside, being simply an extension of the shore line, that the littoral current force has but little if any effect on it, consequently the beneficial effect of this great force is lost where it is much needed, and is only felt some miles outside the harbor, for which reason a great part of the sewerage and garbage of the port when dumped outside the natural bar is brought back by the force of wave action and stranded on the bar and contiguous shores both inside and outside the harbor; but extend the harbor as proposed by this false bar, which will reduce the present natural impediment to the velocity and concentration of the outflowing currents, all this refuse will be carried by natural laws into the great currents of the deep, even though it be dumped in the bay itself.

As observed, the first two named forces are continually at war to close up the mouth of the port or cut it out; between these two immense forces the surplus of power rests with the outflowing current, which, if unduly impeded by the encroachments of the bar on the capacity of the mouth or any sort of natural or artificial contraction, gathers up its force to an extra head level or backrise and breaks out; for this reason the force of wave action can never completely close up the mouth so long as there is outflowing drainage to escape. For the sake of illustration, this surplus force may be rated at about 10 per cent.; in other words, put the force of the sea waves to close up the mouth at 100 and the outflowing current force at 110; this fact is recognized and acknowledged in the theory of jetties, by damming up and contracting the outlets of a harbor or river in order to get an increased head of water inside, and thereby raise and concentrate the force and power of the outflowing current to a greater surplus.

In contradistinction, I propose to increase the difference between these two opposing forces by leaving the force of the outflowing current what it is, 110, but reduce the force of wave action to, say, 70 by means of the proposed false bar; from this it will be observed that the warfare continually existing between the forces of the outflowing current and wave action on the natural bar will be in great measure transferred to a constant warfare between the false bar and the force of wave action, leaving entirely unimpeded the force of the shore currents to act as they now act, with their full force, and by reducing its opposition to actually facilitate the outflowing current, causing it to flow with a greater velocity, and consequently cutting and eroding effect; it is a matter of general knowledge that the bay and harbor is rapidly becoming constricted and shoaled by the inexhaustible amount of street-washings and sewage constantly poured into it from the several cities of the port, and there is no method by which such evil can be so economically obviated as by facilitating an increased velocity of the outflowing currents. This point is one of great sanitary advantage also, as may be illustrated by the harbor hydraulics of many European cities, as well as Chicago, for one, in this country.

Another advantage of primary importance is, that inside of this artificial bar will be as safe an anchorage and harbor of refuge as inside the present bar, a much needed necessity for all classes of vessels trading in or passing by the port; it will also offer a most valuable facility for vessels calling at the port for orders, without subjecting them to incur pilot charges therefor.

It may be remarked that the most scientific ship-architects and acute ship-owners have lately discovered that the economical increase in the capacity of steamers for speed lies in increased length first, increased depth secondly, and little if any increase of beam. When the time shall come for ship-owners to increase the capacity of their steamers proportionate to the increased depth of the bar of this port, as proposed by

this improvement, the port of New York will eclipse the world in the exceeding great economy of its foreign transportation; arguing by the falling market prices of the past dozen years for American produce, otherwise the increased economy of production, this improvement is unquestionably a necessity to American producers, especially since it seems to be a foregone conclusion that grain hereafter, with ordinary crops, will rule 10 per cent. to 20 per cent. less in price than past average here in our Atlantic markets.

Some of this loss must be made up to the farmer in a reduction of transportation rates, otherwise the past rate of commercial progress in this country will be lessened.

For a more specific description of this artificial bar, it will be seen by referring to the chart of 1875, that its upper end starts from the point at latitude 40° 29′ 25″ and longitude 73° 49′ 40″, showing 10 fathoms depth at low-water; from this point it takes a slightly curved direction, and extends to a point at latitude 40° 25′ 44″ and longitude 73° 53′ 48″, at which point is shown quite 16 fathoms at low-water, being a S. W. $\frac{1}{4}$ W. direction from the upper point, not including allowance for variation of compass, the curve being on a radius of 11 miles, and making the entire length of the structure 5 miles 950 yards, though it may be necessary to extend somewhat the southwest projection to secure the full depth and width of channel demanded by the bill, 31.6 by 500 feet mean high-tide.

The height of this artificial bar will be for the first $3\frac{9}{16}$ miles from the southwestern projection 25 feet high from the bottom of the sea, and the upper 2 miles will be 20 feet high. By a long study and careful analysis of the subject the proposer of this improvement believes that the permanent improvement of the channel promised by this bill can be effected by an artificial bar of these dimensions. If it should require a greater capacity of structure it will be at his loss, and if he can effect the permanent improvement by a less capacity of structure it should equally be his gain. Before commencing the work, if Congress should see fit to award him the contract, a most thorough and elaborate survey of the entire ground will again be made, and any possible advantage that can be uncovered thereby will be embraced by the contractor to so modify his work as to reduce the cost of construction, the protection of the government and the harbor and the interests of the port being expressly guaranteed by lines 8 to 12, section 1, of said bill, which specify that "the said H. F. Knapp and his associates may construct such works on the seaward or outside slope of the bar," which simply means that they have no right to work inside the bar; "that such works shall not hinder, delay, or impede navigation." If they do they may be stopped.

Section 5 says "that the said H. F. Knapp and associates are not to resort to the method of shutting off the flow of water through any of the several channels over the bar, either by damming them up in whole or in part by wing, sill, or spur dams or jetties, or in any way impeding or contracting the natural flow of water through them," "but that the design of the entire works is to make a permanently deep and self-sustaining channel-way." This simply means that the improvement is to be effected by working against the force of wave action, and in no other way. In short, the wording, as well as the tenor, of the entire bill show and mean that the results, as well as the works, are to be of a permanent character for all time, the work being done under the supervision of the War Department, who regularly are to report to Congress the progress made, and the work may be stopped and payments, if due, withheld, if the War Department shall consider that the terms of the bill are in any way transgressed or departed from during the execution of the work.

It is further designed by the bill that this improved channel shall locate itself between what are known as the "Swash Channel" and the "Fourteen-feet Channel, inclusive," and any improvement that will first accrue to the main ship channel, which will also be greatly benefited whilst the channel lying between the above-named limits is making, entitle the contractor to no compensation whatever for such improvement. These works will enable the outflowing current to cut and permanently locate the proposed channel over the upper end of the "Fourteen-feet Channel" and the lower end of Romer Shoal, having a general northwest direction of the depth and width specified and necessarily giving far greater widths to shoaler depths, but the preliminary effect is intended to greatly improve "Swash Channel," which is included in the proposed limits, and carries its recompense.

It is well to remark that so long as the top of this artificial bar is not built above the level of the natural bar the outflowing currents will be accelerated, but if it should be built above it, a contraction of the mouth is effected, and the outflowing current becomes impeded, causing injury to the channel and a fill in the bay. Such elevation would also cause the current to flow past the ends of the false bar instead of directly over it. Sand cannot accumulate on top of it, as the entire force of the sea-waves would tend to tear the entire structure away, which cannot be, as it will be built of the heaviest stone. Neither is there any possibility that this bar can cause a shoal of sand, as its entire power is to largely destroy the force that alone heaves sand and sediment into the harbor, and at the same time protect the other two currents, which

increases their velocity and action to cut out and away. On the contrary, the function of this bar is to enable shoals to be cut away.

The Raritan, Shrewsbury, Hackensack, Passaic, and Hudson rivers all discharge into New York Bay; therefore the mouth of New York Bay is really the mouth of all these rivers. Now, by opening the mouth of New York Harbor, as proposed by this plan, the outflowing currents in all these rivers will be quickened and concentrated, and therefore they will deepen and locate their channels to a large extent by their own energy, while any contraction of the mouth of the harbor would greatly deaden their outflowing currents and create fill in them.

Most respectfully,

HENRY F. KNAPP,
Civil Engineer.

General Z. B. TOWER,
Senior Member Board of Engineers.

B.

OCTOBER 21, 1880.

GENERAL: I respectfully offer to the consideration of your Board the following supplemental argument on the "mechanical action of wave motion" in further support of my proposition to deepen the bar at Sandy Hook, now under your consideration.

The amount of wave action of water depends on two conditions, winds and depth of water, both of which modify it from the one extreme of smooth water to the mountainous billows, and though we cannot control the winds from causing wave action, we can modify wave action itself by what may be scientifically termed "interference," a principle fully developed practically as well as experimentally, particularly in numberless experiments with the wave action of light, as frequently performed by scientists like Professor Tyndal, &c.

An explanation of the peculiar mechanism of wave action (as I understand it) may be sufficiently lucid to throw considerable light on my proposition now pending, and give a substantial indorsement to my plan for permanently cutting away the bar at the mouth of this port, by the forces of nature as they now exist, by simply modifying one of these forces by artificial means; in other words, it is proposed to *destroy* or reduce one of Nature's forces for the permanent accomplishment of this object.

In order to treat the subject more comprehensively, let us go back to the beginning of the world, "when darkness covered the face of the earth," and allow to be assumed as a fact the most probable theory that all land was under and covered with a more uniform depth of water; that the action of the winds by causing undulation of the water caused the formation of shoals, &c. (to, however, slight extent primarily), which once formed kept continually increasing by continual deposits washed up by the undulations until the great seas and oceans were dug out and the material therefrom laid on the various shores until great continents and islands were formed to be again modified by many outside causes.

(In the formation of dry land the winds act firstly in conjunction with the water in throwing it up on the shores, and subsequently entirely alone in taking it up from the shores and forming hills, dunes, &c., far above the water-mark.)

The peculiar action of the undulation of waters results in the translation or its tendency to translate solid matter along the bottom, and such translation is invariably from the deepest part of the water to the shoalest in all cases, and the quicker or more abruptly the water shoals the greater is this power of translation *per se* developed; this is true of the theory, but in practice it has its limit only by the angle of incline or rest of the beach, which if too great allows the material to return by its own weight, while the probability of its being moved forward at all is greatly reduced after the equilibrium is once established between the degree of incline and the power of the waves to build; in other words, the greater the power to build, the greater the resistance to build; this is unqualifiedly true, and if not always apparently carried out in nature, is because of littoral currents which undo the work done by translation.

This tendency or power to transmit material is due to the fact that the vertical motion, otherwise force or power, of the undulating waves is converted into horizontal motion and force in proportion as the water shoals, and in proportion to such shoaling is the friction of the water on the bottom necessarily increased, which results in the translation of sand, mud, pebbles, &c.

The result of this wave action is undoubtedly the sole and only cause of the formation of bars across the mouths of harbors, as well as the formation of beaches, &c.

(I believe that geologists credit the greater part of the State of New Jersey with having been thrown up by the sea waves.)

No doubt bar formation is made up to a large extent by matter dropped directly on

it from the river above; but, if so, it ought to be attributed to the indirect consequences of wave action that produces a state of circumstances that results in an impediment to the rapid flow of the current; but it is far more probable that the greater part of the sediment held in suspension by the outflowing current is carried out far beyond the bar and washed back again by the waves, and for this reason the river is compelled to emit itself in a thin, shallow sheet over the bar.

WAVE ACTION.

Though the result of wave action is very decided and plain, its peculiar mechanism of action is quite a riddle.

It has frequently been stated that wave action involves no actual translation of water, but is merely the rise and fall, otherwise undulation, of water. It certainly seems impossible to conceive of the movement of water or anything else that does not involve translation. If water admitted of compressibility this theory might be passable, but as compressibility is not a property of water, it must be acknowledged that there is a translation of water in wave action by the fact that there is a movement of it from crest to hollow or wave to wave, which cannot occur without actual translation, and though such translation is not ordinarily apparent, it is a reality, nevertheless. It is the natural sequence of the water seeking an equipoise or balance of weight or column, and necessarily implies a change of particles, or translation from one column to another.

A book of statistics gives from the observations of a Mr. Douglas, "that when a wave has a height of

8 feet there are 3.5 to a mile and 8 per minute.
15 feet there are 5.6 to a mile and 5 per minute.
20 feet there are 3 to a mile and 4 per minute.
This 20-foot wave involves a velocity of 1¼ miles per minute."

On free tide waves the same book gives their seep as follows:

In 1 foot depth of water 5.7 feet per second.
In 10 feet depth of water 17.9 feet per second.
In 20 feet depth of water 25.4 feet per second.
In 40 feet depth of water 35.9 feet per second.
In 60 feet depth of water 43.9 feet per second.

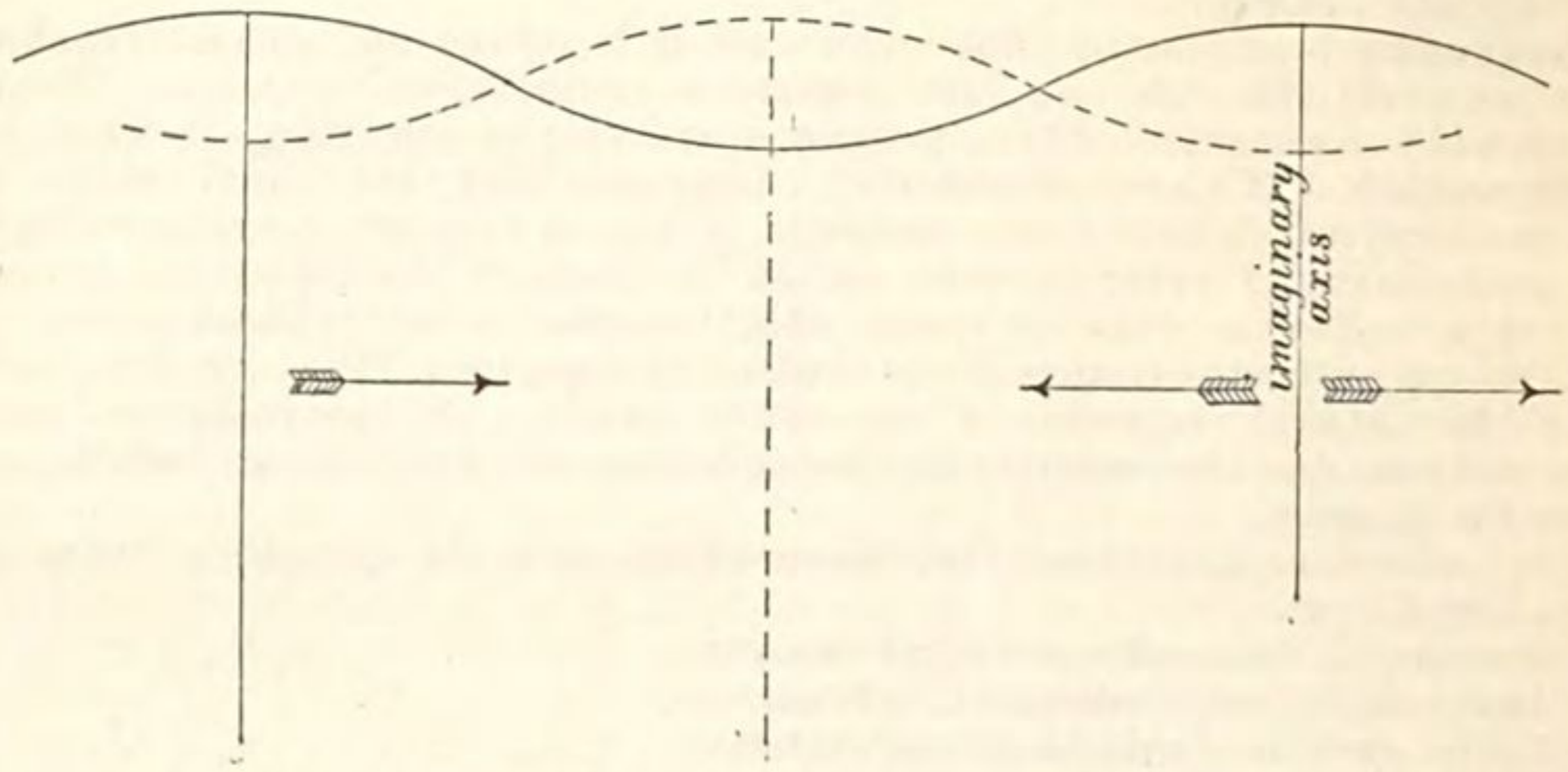
From this it is apparent that a wave has motion, and, consequently, power or force, and the question is, What becomes of the force?

Take a sufficient section of a wave crest weighing, say, 1,000 tons, and, according to the above table, moving in 60 feet depth of water at the rate of 43.9 feet per second, which would represent a force of 44,319 foot-tons; now it is obvious, as the depth of water under this wave crest of 1,000 tons shoals ½ or from 60 feet down to 30 feet depth, that one-half of this force disappears, and when the water shoals to 0 the other half disappears also, and consequently there is just so much original vertical but latterly horizontal force, 44,319 foot-tons, that has disappeared on a shoaling beach within a few seconds of space, and has to be accounted for, which can only be done on the hypothesis that the vertical force has changed into horizontal force, and is then rapidly dissipated and consumed by its friction on the bed of the sea or beach; if the bed be of yielding or unfixed material, like sand, mud, &c., it will be unable to withstand this amount of force or friction, and, in consequence, is rapidly heaved and moved up the beach or shore until the angle of incline of the beach is such that it is able to withstand this force, in which case the equilibrium of force and resistance becomes established.

Probably the reason the translation of the water is not more apparent is for the reason that such translation of the atoms themselves is excessively limited and small, because the height of the wave or amount of water constituting the crest bears so small a proportion to the depth of water, the translation of atoms being not entirely in the wave itself, but throughout the entire height of the vertical column of water under the wave or crest; and though the space through which these atoms move be limited, it is because the sum of the motions, to equal the motion of the crest or wave, is made up throughout the entire vertical column by giving sufficient aggregate of motion, or translation of atoms, to equal the contents of the wave; otherwise, a wave is the result of the atoms of water under it moving to a common center beneath it.

The translations of the atoms of water under waves cannot, of course, be continuously ahead with the directions of the running wave, otherwise the water of the ocean would be all piled up towards and on the shores, but on the contrary it is backwards and forwards—that is to say, the water of the vertical column immediately under the wave becomes flattened down by reason of the greater pressure than exists in the proximate vertical column under the hollow or depressed undulation, and, in consequence, sufficient of the forward half of the water under the wave column is pressed forward to assist in making up the wave to be formed ahead, while sufficient of the backward half is impelled backward to assist in making up the wave advancing in the rear;

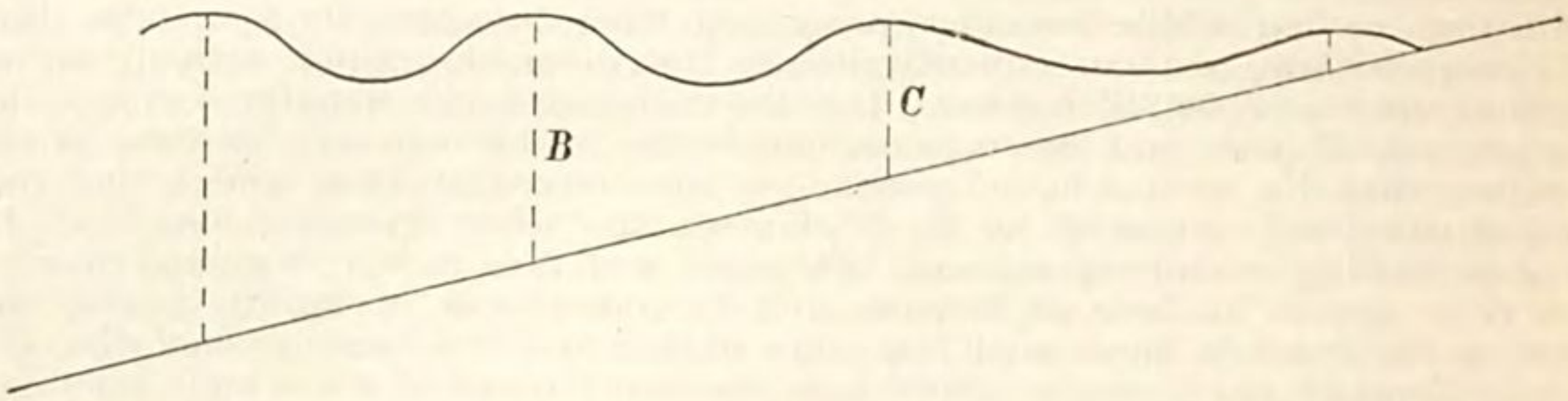
otherwise the column under the wave is divided by a vertical center or axis drawn perpendicularly from the crest, from which common center the water is pressed in two opposite directions; thus it is that the whole amount of translation to which the atoms of water are subjected by wave motion in a water of uniform depth is merely a continuously intermittent backward and forward movement of the atoms from column under crest to column under hollow, the hollow being next thrown up into a wave by the momentum the water has acquired by being pressed from the columns under the two contiguous crests toward the one common column under the intermediate hollow, as in figure here shown, and represents water of uniform depth.



(Say, on a depth of water of 100 feet, a wave has a height of 5 feet; on account of the triangular shape of the crest, probably but 2 per cent. to 3 per cent. of additional atoms to the wave column would equal the contents of the wave.)

Again, as the water shoals the height of the waves becomes less, and the amount of water to equal the wave, the force remaining the same, being yet unconsumed, must be taken up by *increased breadth* of the wave and the vertical column under the wave, and consequently must be transmitted to a greater horizontal distance and at a greater rate of horizontal speed or motion, which involves an increased friction on the bed bottom, and results in moving sand, pebbles, &c., up the incline, &c.

As an illustration of this case, the column B having a greater vertical height and



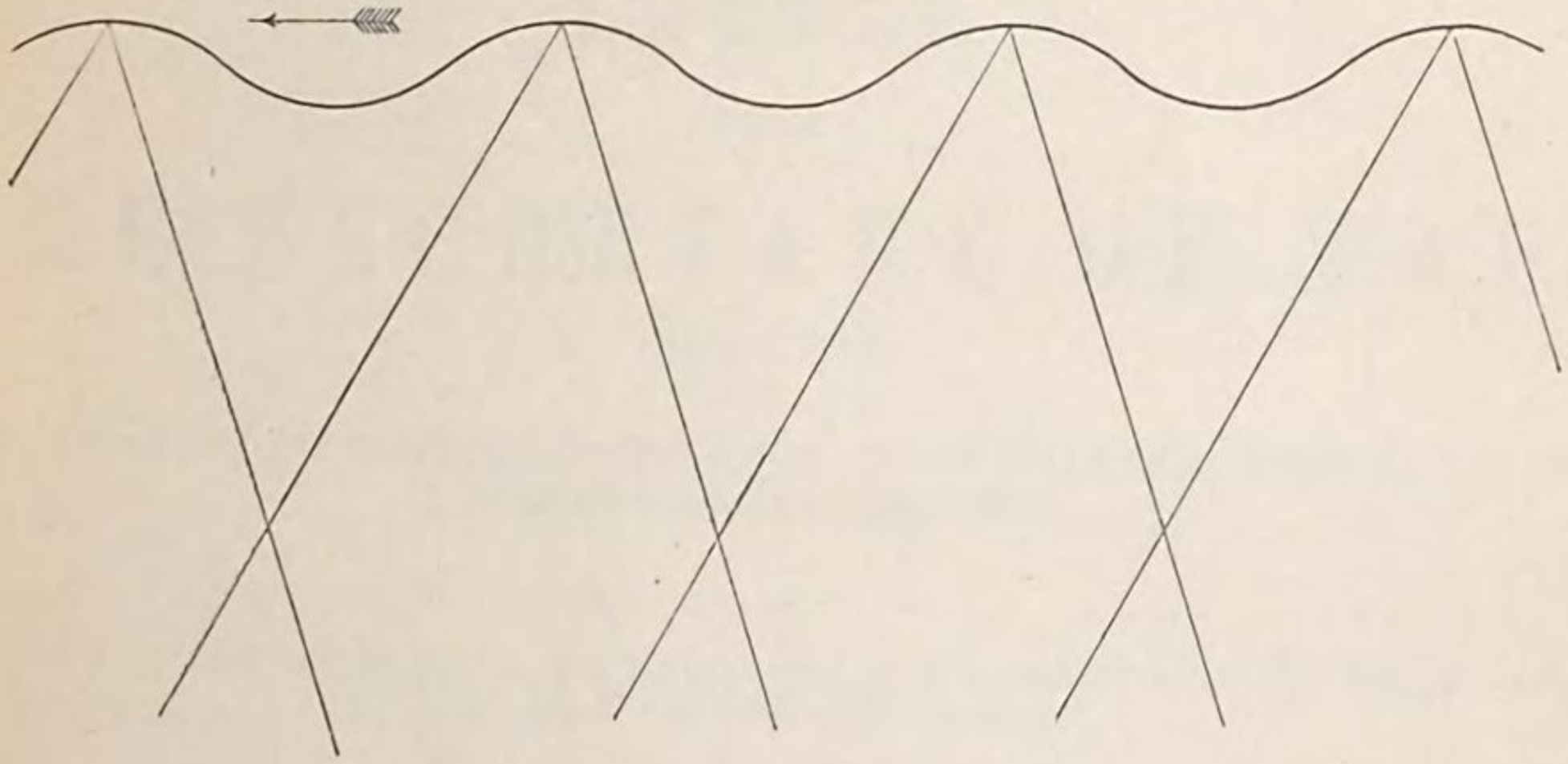
capacity furnishes an equal and positive amount of matter to column C, having a less vertical height; and to receive this amount of water increased breadth of column of wave C must be proportionately enlarged, and this increased width must necessitate increased speed and consequently increased friction on the bottom, the propelling force being continuously used up by this friction, and the friction being always proportionate to the amount of inclination or shoaling of the beach or bottom.

In the retranslation of the water from the backward half of the wave having the less vertical height and greater breadth (as before explained, the water of the column under the wave dividing and going in opposite directions to make up the contiguous waves), the result of this action is just the reverse, and the friction on the bottom is below the mean, while in the half towards the shoaling it is above the mean, the half moving down the incline never cutting down the beach, but the half moving up the incline always building up the beach. One is positive and the other negative.

This is because the water passes from a smaller sectional capacity C, into a larger sectional capacity towards B, causing the water to continually decrease its speed as it enters the enlarging sectional capacity, just the same as the current of a river will decrease when entering the enlarged section of a river, and *vice versa*; consequently, the friction of the water on the bottom from the shoal towards deep water becomes proportionately reduced, thus losing its power to carry back the sand, and the result

is the constant tendency of a beach to grow and encroach on the sea, modified of course by shore currents.

To what extent waves affect deep bottoms must be largely a matter of conjecture; though the deepest bottoms have most probably been affected by the largest waves, all waves do not affect such bottoms, though in shoal water the weight of a wave is most directly supported by the column of water under it quite perpendicularly to the bottom. In deep water the weight of the wave would seem to be supported and dissipated over an extended base, the same as the cone of a mountain is supported and dissipated over an extended base, according to a well-known law of nature in such matters. This would go to show, then, that all waves do not affect very deep bottoms by their motion, and suggests that, except in rapidly shoaling positions, the greatest part of wave force is at the surface, gradually lessening towards the bottom.



In this accompanying illustration I have undertaken to show how the weight of waves is supported and dissipated by extending base lines towards the bottom, so that where the bottom is deep these lines actually cross one another, in which case, below their lines of intersection, the water must have a uniform pressure. The illustration shows the waves running to the left, and therefore the greatest resistance is towards the left, and the lines are therefore inclined to suit that resistance.

From this I therefore argue that the proposed artificial bar at New York, having an elevation of 25 feet in 65 to 70 feet of water, will destroy from 20 per cent. to 25 per cent. of the force of the sea waves.

Again, the height or amplitude of waves as well as their velocity depends on the primary condition of depth, the velocity or force being proportionate to the square root of the depth, and as the depth decreases the height as well as the velocity decreases, resulting in a proportionate amount of force or motion being lost by friction in any position of decreased depth, that force is gone forever by the mere passage over the shoal or decreased depth.

In a discussion on a paper entitled "Origin of the Chesil Bank," before the Institution of Civil Engineers, London, in 1875, Mr. John Dunning stated that "he had recently seen a stone the size of his doubled fist which had been thrown by the force of the waves over the wall on to the esplanade at Sidmouth, a distance of 30 feet." In the same discussion Mr. Stevenson was quoted as having said in a paper on the German Ocean that "some drift stones of large dimensions, measuring upwards of 30 cubic feet or more than 2 tons weight, have during storms been thrown upon the (Bell) Rock from deep water."

Mr. F. Wynne stated in this discussion that "A Spanish galleon was known to have gone down off Chesilton many years ago, and since then, after heavy storms, ingots of silver were sometimes washed up at Chesilton."

Again, "breakers" are caused by the resistance and friction the bottom part of a wave encounters in passing over the beach or a shoal, while the upper part of the wave, meeting with less resistance, maintains its velocity to a greater extent, and in consequence curls and breaks over.

Most respectfully,

HENRY F. KNAPP.

Gen. Z. B. TOWER,
Senior member of the Board of Engineers.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 16.

CONTINGENT EXPENSES OF THE MILITARY ESTABLISHMENT.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

An account of the contingent expenses of the military establishment for the year ending June 30, 1880.

JANUARY 5, 1881.—Referred to the Committee on Expenditures in the War Department and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 3, 1881.

The Secretary of War has the honor to submit to Congress a statement of the expenditure of the moneys appropriated for the contingent expenses of the military establishment during the fiscal year ending June 30, 1880, as required by section 229 of the Revised Statutes.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER *of the House of Representatives.*

TREASURY DEPARTMENT,
SECOND AUDITOR'S OFFICE,
Washington, D. C., December 23, 1880.

SIR: I have the honor to transmit herewith a "statement of the expenditure of the moneys appropriated for the contingent expenses of the military establishment" for the fiscal year ending June 30, 1880, to be laid before Congress, in accordance with section 229 Revised Statutes.

The statement shows that the sum of $38,647 has been expended, under the following heads of appropriations:

Contingencies of the Army, 1878	$707 50
Contingencies of the Army, 1879	6 16
Contingencies of the Army, 1880	37,933 34
Total	38,647 00

Very respectfully,

O. FERRISS, *Auditor.*

Hon. SECRETARY OF WAR.

Statement of the expenditure of the moneys appropriated for the contingent expenses of the military establishment during the fiscal year ending June 30, 1880.

CONTINGENCIES OF THE ARMY, 1878.

Date.	By whom paid.	To whom paid.	On what account.	Amount.	Total.
1879.					
Sept. 30	Treasury Department.	Alfred Cox	Collecting facts, &c., in case of Brady *vs.* Atlantic Works.	$42 50	
30	....do	Nelson Curtiss	.....do	140 00	
Oct. 3	....do	George P. Sanger	Professional services in above case.	500 00	
20	....do	Edward Sweeney	Services as scout	25 00	
					$707 50

CONTINGENCIES OF THE ARMY, 1879.

Aug. 11	E. M. Lawton, disbursing clerk.	J. L. Lomax	Copying report	$2 91	
11	....do	J. E. Potter & Co	Potter's American Monthly, for library.	1 50	
Nov. 3	....do	Oregonian Publishing Company.	Advertising	1 75	
					$6 16

CONTINGENCIES OF THE ARMY, 1880.

July 3	E. M. Lawton, disbursing clerk.	M. E. Mann	Book for library	$7 00	
7	....do	James J. Chapman	757 selected parchments, printed for officers' commissions.	643 45	
11	....do	George W. McCrary, Secretary of War.	Traveling expenses from Washington, D. C., to Boston, Mass., and Augusta, Me., and return.	93 95	
14	....do	George M. Schaefer	Repairs, &c., in old Navy Department building.	1,635 27	
15	....do	H. T. Crosby, chief clerk.	Traveling expenses from Washington, D. C., to Fort Monroe, Va., Baltimore, Md., and New York City, and return.	56 05	
26	....do	G. W. Chamberlen	Paint, oils, varnishes, &c	2,075 30	
16	....do	W. C. and F. P. Church.	Army and Navy Journal, for library.	6 00	
21	....do	H. T. Crosby, chief clerk.	Traveling expenses from Washington, D. C., to New York City and return.	34 00	
25	....do	M. Morrison	Copying	13 91	
25	....do	J. D. & E. S. Dana	Books for library	9 18	
31	....do	W. H. Roberts	Codification of Army Regulations.	150 00	
31	....do	Helen Q. Moody	Copying	75 00	
31	... do	N. H. Camp	Codification of Army Regulations.	61 27	
31	....do	J. W. Johnson	.....do	93 37	
31	....do	I. W. Demoss	Services as assistant engineer, July, 1879.	100 75	
31	....do	H. C. Griffith	.....do	80 00	
31	....do	D. E. Sharretts	Services as conductor of elevator, July, 1879.	60 00	
31	....do	C. W. Simpson	Services as messenger, July, 1879.	50 00	
31	....do	G. W. Graves	Services as telegraph messenger, July, 1879.	10 00	
Aug. 1	....do	Julius Bien	Preparing maps and plates for report on Turkish and Russian campaigns of 1877 and 1878.	1,900 00	
2	....do	M. Morrison	Copying	21 16	
4	....do	John Tweedale	Traveling expenses from Washington, D. C., to Boston, Mass., and return.	55 00	
6	....do	Adams Express Co	Freight charges in July, 1879	5 40	
6	....do	W. H. & O. H. Morrison.	Books for law library	9 25	
7	....do	Baltimore & Ohio Railroad Company.	Telegraphing	2 87	
11	....do	J. L. Lomax	Copying	28 15	
11	....do	M. Morrison	.....do	16 08	

Statement of the expenditure of the moneys appropriated for the contingent expenses of the military establishment, &c.—Continued.

CONTINGENCIES OF THE ARMY, 1880—Continued.

Date.	By whom paid.	To whom paid.	On what account.	Amount.	Total.
1879.					
Aug. 12	E. M. Lawton, disbursing clerk.	Atlantic & Pacific Telegraph Company.	Telegraphing	$0 27	
13	....do	H. L. Pelouze & Son	Printing-press, type, &c	218 00	
14	....do	G. W. Chamberlen	Painting, kalsomining, &c	2, 550 00	
18	....do	J. B. Lippincott & Co.	800 copies Laidley's Rifle Firing	801 50	
19	....do	Atlantic and Pacific Telegraph Company.	Telegraphing, July, 1879	6 62	
19	....do	John E. Potter & Co.	Potter's American Monthly, for library.	3 00	
27	....do	R. T. Jacob, jr.	Expenses transporting insane soldiers from Fort Buford, Dak., to Washington, D. C.	14 50	
29	....do	Morell Mareau	Telephone wire from War Department to Government Printing Office.	70 00	
30	....do	W. H. Roberts	Codification Army Regulations	150 00	
30	....do	N. H. Camp	....do	61 28	
30	....do	J. W. Johnson	....do	100 00	
30	....do	I. W. Demoss	Services as assistant engineer, August, 1879.	100 75	
30	....do	H. C. Griffith	....do	80 00	
30	....do	D. E. Sharretts	Services as conductor of elevator, August, 1879.	60 00	
30	....do	C. W. Simpson	Services as messenger, August, 1879.	50 00	
30	....do	G. W. Graves	Services as telegraph messenger, August, 1879.	10 00	
30	....do	M. Morrison	Copying	18 45	
Sept. 1	....do	C. H. Carrington	Traveling expenses to New York City and return.	23 00	
2	... do	H. Q. Moody	Copying	75 00	
4	....do	Western Union Telegraph Company.	Telegraphing, July, 1879	178 75	
4	....do	....do	....do	56 61	
4	....do	Adams Express Co	Freight charges, August, 1879	7 25	
4	....do	D. Appleton & Co	600 copies of Greene's Russian Campaign, and binding same.	1, 278 30	
13	....do	J. L. Lomax	Copying	60 74	
15	....do	M. Morrison	....do	4 04	
16	....do	R. B. Mohun	Books for library	49 00	
19	....do	J. W. Scully	Expenses transporting insane soldier from Orkney Springs, Va., to Washington, D. C.	9 60	
30	....do	W. H. Roberts	Codification Army Regulations	150 00	
30	....do	H. Q. Moody	Copying	75 00	
30	....do	N. H. Camp	Codification Army Regulations	62 63	
30	....do	J. W. Johnson	....do	100 00	
30	....do	I. W. Demoss	Services as assistant engineer, September, 1879.	97 50	
30	....do	H. C. Griffith	....do	80 00	
30	... do	D. E. Sharretts	Services as conductor of elevator, September, 1879.	60 00	
30	....do	C. W. Simpson	Services as messenger, September, 1879.	50 00	
30	....do	G. W. Graves	Services as telegraph messenger, September, 1879.	10 00	
30	....do	J. W. Lomax	Copying	56 60	
30	....do	M. Morrison	....do	52 23	
30	....do	Adams Express Co	Freight charges in September, 1879.	2 45	
30	....do	James J. Chapman	Printing officers' commissions on parchment.	427 55	
30	....do	Atlantic and Pacific Telegraph Company.	Telegraphing	1 00	
30	....do	Western Union Telegraph Company.	....do	121 74	
30	....do	....do	....do	72 05	
Oct. 3	....do	James J. Chapman	Printing officers' commissions on parchment.	304 30	
18	....do	F. B. Mohun	Books for library	193 75	

Statement of the expenditure of the moneys appropriated for the contingent expenses of the military establishment, &c.—Continued.

CONTINGENCIES OF THE ARMY, 1880—Continued.

Date.	By whom paid.	To whom paid.	On what account.	Amount.	Total.
1879.					
Oct. 21	E. M. Lawton, disbursing clerk.	R. K. Evans	Expenses while conveying patient to insane asylum, Washington, D. C.	$9 50	
30	....do	George W. McCrary, Secretary of War.	Traveling expenses from Washington, D. C., to Fort Leavenworth, Kans., and return.	141 55	
31	....do	W. H. Roberts	Codification Army Regulations	150 00	
31	....do	H. Q. Moody	Copying	75 00	
31	....do	N. H. Camp	Codification Army Regulations	61 27	
31	....do	J. W. Johnson	.....do	100 00	
31	....do	J. H. Cunningham	.....do	84 00	
31	....do	I. W. Demoss	Services as assistant engineer, October, 1879.	100 75	
31	....do	H. C. Griffith	.....do	80 00	
31	....do	D. E. Sharretts	Services as conductor of elevator, October, 1879.	60 00	
31	....do	C. W. Simpson	Services as messenger, October, 1879.	50 00	
31	....do	G. W. Graves	Services as telegraph messenger, October, 1879.	10 00	
31	....do	M. Morrison	Copying	40 00	
Nov. 6	....do	Western Union Telegraph Company.	Telegraphing in September, 1879.	178 40	
6	....do	....do	.....do	27 93	
10	....do	W. H. Roberts	Codification Army Regulations	200 00	
12	....do	Adams Express Co	Freight charges in October, 1879	75	
13	....do	F. Y. Commagère	Services as clerk to board of Commissioners of the military prison.	35 00	
15	....do	M. Morrison	Copying	33 00	
20	....do	American News Co	Book for library	8 00	
21	....do	James J. Chapman	Books for library	84 98	
21	....do	H. T. Crosby, chief clerk.	Traveling expenses from Washington, D. C., to Chicago, Ill., and return.	69 75	
22	....do	Atlantic and Pacific Telegraph Co.	Telegraphing	1 92	
26	....do	John Evans	Book for library	13 50	
29	....do	W. H. Roberts	Codification Army Regulations	200 00	
29	....do	H. Q. Moody	.....do	75 00	
29	....do	N. H. Camp	.....do	62 63	
29	....do	J. W. Johnson	.....do	150 00	
29	....do	J. H. Cunningham	.....do	79 28	
29	....do	J. W. Demoss	Services as assistant engineer, November, 1879.	97 50	
29	....do	H. C. Griffith	.....do	80 00	
29	....do	D. E. Sharretts	Services as conductor of elevator, November, 1879.	60 00	
29	....do	Frederick Scheede	Services as fireman, November, 1879.	60 00	
29	....do	G. W. Graves	Services as telegraph messenger, November, 1879.	10 00	
29	....do	M. Morrison	Copying	16 78	
29	....do	Mary Cruit	Carriage hire	6 00	
Dec. 3	....do	Western Union Telegraph Co.	Telegraphing, October, 1879	158 04	
3	....do	....do	.....do	157 43	
3	....do	Princeton Review	Book for library	2 00	
4	....do	Norris Peters	Photolithographing and transferring map.	40 00	
8	....do	Adams Express Co	Freight charges in November, 1879.	2 80	
9	....do	J. L. Lomax	Copying	45 17	
12	....do	John McDermott & Bro.	Repairing mail wagon	198 00	
13	....do	P. F. Wharton	Painting portrait of A. J. Dallas, for War Department Gallery.	200 00	
15	... do	M. E. Mann	Book for library	6 00	
15	....do	M. Morrison	Copying	19 17	
17	....do	Norris Peters	Photolithographing and transferring maps.	120 00	
18	....do	E. B. Sargent	Book for library	2 00	
19	....do	Dobler, Mudge & Chapman.	Stationery	41 30	
20	....do	D. Davidson	National Republican	6 00	

Statement of the expenditure of the moneys appropriated for the contingent expenses of the military establishment, &c.—Continued.

CONTINGENCIES OF THE ARMY, 1880—Continued.

Date.	By whom paid.	To whom paid.	On what account.	Amount.	Total.
1879.					
Dec. 22	E. M. Lawton, disbursing clerk.	E. M. Carson	Book for library	$2 00	
24	do	Atlantic and Pacific Telegraph Co.	Telegraphing	1 40	
29	do	E. B. Williston	Expenses carrying a lunatic from depot to Insane Asylum.	3 00	
30	do	M. W. Galt, Bro. & Co.	Engraving	2 00	
31	do	M. Morrison	Copying	75 61	
31	do	J. L. Lomax	do	66 70	
31	do	W. H. Roberts	Codification Army Regulations	200 00	
31	do	N. H. Camp	do	61 28	
31	do	J. W. Johnson	do	150 00	
31	do	J. H. Cunningham.	do	84 00	
31	do	I. W. Demoss	Services as assistant engineer, December, 1879.	100 75	
31	do	H. C. Griffith	do	80 00	
31	do	D. E. Sharretts	Services as conductor of elevator, December, 1879.	60 00	
31	do	Frederick Scheede.	Services as fireman, December, 1879.	60 00	
31	do	Wm. F. Sapp, jr.	Services as messenger, December, 1879.	60 00	
31	do	G. W. Graves	Services as telegraph messenger, December, 1879.	10 00	
31	do	Western Union Telegraph Co.	Telegraphing, November, 1879.	155 13	
31	do	do	do	36 26	
31	do	do	Rent of telephones, August 1 to December 31, 1879.	50 00	
1880.					
Jan. 16	do	M. Morrison	Copying	18 57	
20	do	Adams Express Co	Freight charges, December, 1879.	8 00	
23	do	F. B. Mohun	Books for library	257 50	
29	do	Western Union Telegraph Co.	Telegraphing, December, 1879	136 43	
29	do	do	do	45 32	
30	do	Evening Star News Company.	Advertising	2 06	
31	do	M. Morrison	Copying	81 75	
31	do	J. L. Lomax	do	122 98	
31	do	W. H. Roberts	Codification Army Regulations	200 00	
31	do	N. H. Camp	do	150 00	
31	do	J. W. Johnson	do	150 00	
31	do	J. H. Cunningham.	do	85 00	
31	do	I. W. Demoss	Services as assistant engineer, January, 1880.	100 75	
31	do	H. C. Griffith	do	80 00	
31	do	D. E. Sharretts	Services as conductor of elevator, January, 1880.	60 00	
31	do	Frederick Scheede	Services as fireman, January, 1880.	60 00	
31	do	Wm. F. Sapp, jr.	Services as messenger, January, 1880.	60 00	
31	do	G. W. Graves	Services as telegraph messenger, January, 1880.	10 00	
Feb. 3	do	Daniel Leonard	Labor and materials	151 50	
5	do	H. T. Crosby	Notarial services	13 50	
14	do	M. Morrison	Copying	22 35	
14	do	Atlantic and Pacific Telegraph Company.	Telegraphing, January, 1880	1 40	
20	do	L. J. Barbot	Examining title to the Boylston House, Charleston, S. C.	100 00	
24	do	H. L. Pelouze & Son.	Printing materials	19 56	
28	do	W. H. Roberts	Codification Army Regulations	200 00	
28	do	N. H. Camp	do	150 00	
28	do	J. W. Johnson	do	150 00	
28	do	J. H. Cunningham.	do	80 00	
28	do	I. W. Demoss	Services as assistant engineer, February, 1880.	94 25	
28	do	H. C. Griffith	do	80 00	
28	do	Horace Noah	Work on library catalogue	63 46	
28	do	D. E. Sharretts	Services as conductor of elevator, February, 1880.	60 00	

Statement of the expenditure of the moneys appropriated for the contingent expenses of the military establishment, &c.—Continued.

CONTINGENCIES OF THE ARMY, 1880—Continued.

Date.	By whom paid.	To whom paid.	On what account.	Amount.	Total.
1880.					
Feb. 28	E. M. Lawton, disbursing clerk.	Frederick Scheede	Services as fireman, February, 1880.	$60 00	
28	....do	Wm. F. Sapp, jr...	Services as messenger, February, 1880.	60 00	
28	....do	G. W. Graves	Services as telegraph messenger, February, 1880.	10 00	
28	....do	S. E. Griswold	Superintending charwomen ...	4 61	
28	....do	Western Union Telegraph Co.	Telegraphing, January, 1880 ...	144 45	
28	....do	....do	.....do	40 40	
28	....do	F. B. Mohun	Books for library.....	165 25	
28	....do	Daniel Leonard ...	Labor and materials.....	162 25	
28	....do	G. W. Chamberlen.	Painting, glazing, &c	169 45	
28	....do	James J. Chapman	Books for library.....	20 00	
Mar. 2	....do	M. Morrison	Copying.....	59 41	
3	....do	W. W. Rapley	Materials and labor.....	63 25	
4	....do	Adams Express Company.	Freight charges in February, 1880.	20 20	
4	....do	M. Morrison	Copying.....	41 20	
5	....do	L. C. Northrop	Examining title to Boylston House, Charleston, S. C.	275 00	
5	....do	A. B. Gardner, judge advocate.	Traveling expenses from Governor's Island, N. Y., to Washington, D. C., and return.	36 80	
6	....do	J. L. Lomax.....	Copying.....	15 65	
6	....do	Richard Osborne..	Labor, 6 days.....	7 50	
11	....do	John McDermott & Bro.	Repairing mail-wagon	91 50	
16	....do	Theodore Rue	Nickel plates for library.....	70 80	
18	....do	Atlantic and Pacific Telegraph Company.	Telegraphing.....	35	
22	....do	Baltimore and Ohio Railroad Co.	Transportation.....	10 00	
24	....do	American News Co	Book for library.....	8 00	
27	....do	Charles Smith	Care of captive Indian child...	40 00	
27	....do	....do	.....do.....	6 67	
29	....do	A. C. Floyd	Books for library	10 00	
29	....do	J. M. Gould	.....do.....	6 25	
31	....do	J. L. Lomax.....	Copying.....	190 43	
31	....do	....do	.....do.....	35 42	
31	....do	M. Morrison	.....do.....	97 87	
31	....do	W. H. Roberts	Codification Army Regulations	200 00	
31	....do	N. H. Camp	.....do.....	150 00	
31	....do	J. W. Johnson	.....do.....	150 00	
31	....do	J. H. Cunningham.	.....do.....	85 00	
31	....do	I. W. Demoss	Services as assistant engineer, &c., March, 1880.	100 75	
31	....do	H. C. Griffith.....	.....do.....	80 00	
31	....do	Horace Noah	Work on library catalogue	75 00	
31	....do	D. E. Sharretts....	Services as conductor of elevator, March, 1880.	60 00	
31	....do	Frederick Scheede	Services as fireman, March, 1880	60 00	
31	....do	Wm. F. Sapp, jr...	Services as messenger, March, 1880.	60 00	
31	....do	G. W. Graves	Services as telegraph messenger, March, 1880.	10 00	
31	....do	S. E. Griswold ...	Superintending charwomen ...	30 00	
31	....do	Daniel Leonard ...	Carpenter's materials	68 75	
31	....do	Western Union Telegraph Company.	Telegraphing, February, 1880..	96 29	
31	....do	....do	.....do.....	38 18	
31	....do	Adams Express Company.	Freight charges, March, 1880 ..	15 45	
April 6	....do	Ernst Wagner	Extra duty pay, &c., engineer office, headquarters Department of the Platte.	14 05	
8	....do	Gold and Stock Telegraph Company.	Rent of telephones.....	60 00	
9	....do	William Held....	Care of captive Indian child ..	33 33	
9	....do	J. W. Boteler & Bro.	Soap, blacking, dusters, &c....	152 50	
9	....do	S. Y. Gilliam	3 laborers 16⅔ days	61 25	
14	....do	M. Morrison	Copying.....	29 34	

Statement of the expenditure of the moneys appropriated for the contingent expenses of the military establishment, &c.—Continued.

CONTINGENCIES OF THE ARMY, 1880—Continued.

Date.	By whom paid.	To whom paid.	On what account.	Amount.	Total.
1880.					
April 17	E. M. Lawton, disbursing clerk.	G. W. McElfresh..	Traveling expenses, &c.....	$53 50	
20	....do	G. N. Sullivan	Books for library	15 00	
23	....do	F. O. Maxson	Traveling expenses	75 75	
23	....do	..... do	Services, March 12 to 31, 1880, connected with surveys in Virginia.	95 00	
27	....do	Littell & Co	Books for library.....	8 00	
29	....do	Alexander Ramsey, Secretary of War.	Traveling expenses from Washington, D. C., to Fortress Monroe and return.	9 50	
30	....do	J. L. Lomax.....	Copying	66 99	
30	....do	M. Morrison	.....do.....	57 45	
30	....do	W. H. Roberts	Codification Army Regulations	200 00	
30	....do	N. H. Camp	.....do.....	150 00	
30	....do	J. W. Johnson	.....do.....	150 00	
30	....do	J. H. Cunningham	.....do.....	79 25	
30	....do	I. W. Demoss	Services as assistant engineer, April, 1880.	97 50	
30	....do	H. C. Griffith.....	.....do	80 00	
30	....do	Horace Noah	Work on library catalogue	75 00	
30	....do	D. E. Sharretts....	Services as conductor of elevator, April, 1880.	60 00	
30	....do	Frederick Scheede	Services as fireman, April, 1880.	60 00	
30	....do	William F. Sapp, jr.	Services as messenger, April, 1880.	60 00	
30	....do	G. W. Graves	Services as telegraph messenger, April, 1880.	10 00	
30	....do	S. E. Griswold	Superintending charwomen ...	30 00	
30	....do	Honore Kelly	Services as laborer, April, 1880.	15 00	
May 1	....do	Daniel Leonard ...	Boxes, signs, &c., for library...	21 25	
1	....do	Theodore F. Hammond.	Traveling expenses from Washington, D. C., to Pittsburgh, Pa., and return.	15 75	
4	....do	Orlando P. Bloss ..	Expenses in delivering recruit at Pittsburgh barracks.	4 50	
4	....do	Western Union Telegraph Company.	Telegraphing, March, 1880.....	129 05	
4	....do	....do	.....do.....	81 83	
6	....do	Atlantic and Pacific Telegraph Company.	.....do.....	30	
6	....do	A. Hahl & Co.....	Electric bells.....	31 40	
6	....do	Adams Express Company.	Freight charges, April, 1880 ...	1 90	
6	....do	H. E. Cole.....	Book for library.....	3 50	
7	....do	F. B. Mohun	.....do.....	115 00	
8	....do	F. O. Maxson	Services from April 1 to May 7, inclusive, 1880.	185 00	
8	....do	Steamship Clinton	Transportation.....	22 00	
12	....do	J. L. Lomax.....	Copying.....	64 16	
17	....do	Ernst Wagner	Extra-duty pay.....	10 50	
17	....do	O. P. Bloss	Expenses in returning deserter to authorities.....	24 00	
20	....do	M. I. Townsend ...	Professional services, case of Cadet J. C. Whittaker.	764 15	
22	....do	Wm. M. Johnson..	Expenses in New York City ..	14 00	
22	....do	Alexander Ramsey, Secretary of War.	Traveling expenses from Washington, D. C., to New York and return.	54 31	
31	....do	M. Morrison	Copying.....	83 77	
31	....do	W. H. Roberts	Codification Army Regulations	200 00	
31	....do	N. H. Camp.....	.....do.....	150 00	
31	....do	J. H. Cunningham	.....do.....	86 00	
31	....do	I. W. Demoss	Services as assistant engineer, May, 1880.	100 75	
31	....do	H. C. Griffith.....	.....do.....	80 00	
31	....do	Horace Noah	Work on library catalogue	75 00	
31	....do	D. E. Sharretts ...	Services as conductor of elevator, May, 1880.	60 00	
31	....do	Frederick Scheede	Services as fireman, May, 1880.	60 00	
31	....do	William F. Sapp, jr.	Services as messenger, May, 1880.	60 00	
31	....do	G. W. Graves	Services as telegraph messenger, May, 1880.	10 00	
31	....do	S. G. Griswold	Superintending charwomen ...	30 00	

Statement of the expenditure of the moneys appropriated for the contingent expenses of the military establishment, &c.—Continued.

CONTINGENCIES OF THE ARMY, 1880—Continued.

Date.	By whom paid.	To whom paid.	On what account.	Amount.	Total.
1880.					
May 31	E. M. Lawton, disbursing clerk.	Honore Kelly	Services as laborer, May, 1880	$15 00	
31	do	Baltimore & Ohio, American Union Telegraph Company.	Telegraphing	4 65	
31	do	do	do	20 69	
31	do	Western Union Telegraph Company.	Telegraphing, April, 1880	27 36	
31	do	do	do	53 12	
31	do	do	do	116 70	
31	do	J. E. Weyss	Services as draughtsman, May, 1880.	175 00	
31	do	Louis Nell	Services as assistant engineer, May, 1880.	175 00	
31	do	Frank O. Maxson	do	115 00	
31	do	H. W. Henshaw	Services as clerk, May, 1880	125 00	
31	do	H. T. Crosby, chief clerk.	Traveling expenses from Washington, D. C., to Baltimore, Md., and return, twice.	28 00	
31	do	Adams Express Company.	Freight charges, May, 1880	2 75	
June 4	do	Maurice Bradley	Extra-duty pay, engineer's office, Headquarters Department of the Platte.	10 85	
4	do	Ernst Wagner	do	10 85	
7	do	D. Appleton & Co.	1,200 copies of Tactics	1,601 90	
10	do	E. M. Lawton	Traveling expenses from Washington, D. C., to Baltimore, Md., and return.	11 15	
10	do	J. D. Laman	Expenses of a suit brought for replevin of a horse.	25 00	
10	do	Western Union Telegraph Company.	Six months' rent of telephones.	115 00	
12	do	J. B. Lippincott & Co.	1,400 copies "Laidley's Rifle Firing."	1,263 00	
12	do	Alexander Ramsey, Secretary War.	Traveling expenses from Washington, D. C., to West Point and return.	34 70	
14	do	J. L. Lomax	Copying	148 62	
16	do	H. L. Abbot, major engineers.	100 copies of "Report on Siege Artillery in Campaigns against Richmond."	210 00	
16	do	James J. Chapman	Books for library	111 00	
16	do	do	Letter and invoice files	5 75	
17	do	M. E. Mann	Book for library	7 00	
17	do	James Anglim & Co.	do	6 00	
22	do	Herald Publishing Company.	Advertising	9 00	
22	do	Publishers of the Daily Critic.	do	11 08	
23	do	National Republican Publishing Company.	do	12 00	
24	do	William C. Bryant & Co.	do	18 00	
24	do	The "Press" Company.	do	13 95	
25	do	F. B. Mohun	Stationery	582 50	
28	do	G. W. Knox	Carting	6 20	
29	do	M. W. Galt, Bro. & Co.	Engraving	15 50	
30	do	W. H. Roberts	Codification Army Regulations	200 00	
30	do	N. H. Camp	do	150 00	
30	do	J. H. Cunningham	do	82 00	
30	do	I. W. Demoss	Services as assistant engineer, &c., June, 1880.	97 50	
30	do	H. C. Griffith	do	80 00	
30	do	Horace Noah	Work on library catalogue	75 00	
30	do	D. E. Sharretts	Services as conductor of elevator, June, 1880.	60 00	
30	do	Frederick Scheede	Services as fireman, June, 1880.	60 00	
30	do	Western Union Telegraph Company.	Telegraphing, June, 1880	44 69	

Statement of the expenditure of the moneys appropriated for the contingent expenses of the military establishment, &c.—Continued.

CONTINGENCIES OF THE ARMY, 1880—Continued.

Date.	By whom paid.	To whom paid.	On what account.	Amount.	Total.
1880.					
June 30	E. M. Lawton, disbursing clerk.	Western Union Telegraph Company.	Telegraphing, June, 1880	$248 32	
30	....do	James J. Chapman	Books for library	20 85	
30	....do	Francis B. Mohun	Stationery	80 00	
30	....do	Julius Bien	Preparing "Cotton map"	50 00	
30	....do	Maurice Bradley	Extra-duty pay, engineer's office, Headquarters Department of the Platte.	10 50	
30	....do	Ernst Wagner	....do	10 50	
30	....do	Western Union Telegraph Company.	Telegraphing, May, 1880	63 38	
30	....do	....do	....do	225 90	
30	....do	Adams Express Company.	Freight charges, June, 1880	4 55	
30	....do	Royce & Moreau	Repairing telegraph	10 00	
30	....do	J. L. Lomax	Copying	18 93	
30	....do	F. O. Maxson	Services as assistant engineer, June, 1880.	135 00	
30	....do	M. Morrison	Copying	72 37	
30	....do	J. E. Weyes	Services as draughtsman, June, 1880.	175 00	
30	....do	Honore Kelly	Services as laborer, June, 1880.	15 00	
30	....do	S. E. Griswold	Superintending charwomen	60 00	
30	....do	William F. Sapp, jr	Services as messenger, June, 1880.	60 00	
					$37,564 25
1879.					
Dec. 9	Treasury Department.	Galveston, Harrisburg and San Antonio Railr'd.	Transportation of old soldier en route to Soldiers' Home.	26 30	
19	....do	Bureau Engraving and Printing.	Engraving and printing for artillery school at Fort Monroe.	200 00	
1880.					
Jan. 16	....do	Virginia Midland and Great Southern Railroad Company.	Transportation of widow and children of Lieutenant Belger, Third Infantry.	7 15	
23	....do	Western and Atlantic Railroad Company.	Transportation of Mrs. O'Laughlin, late laundress.	25 50	
23	....do	Chicago, Burlington and Quincy Railroad Company.	Transportation of old soldier en route to Soldiers' Home.	24 44	
30	....do	Utah and Northern Railroad Company.	Transportation of widow and children of Lieutenant Belger.	50 00	
Feb. 20	....do	Pittsburgh, Fort Wayne and Chicago Railroad Company.	Transportation of old soldier en route to Soldiers' Home.	20 00	
20	....do	International and Great Northern Railroad Company.	Transportation of Hospital Steward David J. Scott.	15 70	
					369 09
					38,647 00

RECAPITULATION.

Contingencies of the Army, fiscal year 1878	$707 50
Contingencies of the Army, fiscal year 1879	6 16
Contingencies of the Army, fiscal year 1880	37,933 34
	38,647 00

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 17.

SUMPAWAUMS INLET, PATCHOGUE RIVER, AND WATER-WAY CONNECTING JAMAICA BAY WITH CORNELL'S LANDING.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of surveys of the Sumpawaums Inlet, Patchogue River, and water-way connecting Jamaica Bay with Cornell's Landing.

JANUARY 5, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 3, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers dated the 23d ultimo, and accompanying copies of reports from Col. John Newton, Corps of Engineers, of examinations and surveys made in compliance with the provisions of the river and harbor act of June 14, 1880, at Sumpawaums Inlet, Long Island, New York; Patchogue River, New York; and for water-way connecting Jamaica Bay with Cornell's Landing, New York.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., December 23, 1880.

SIR: In compliance with provisions of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Col. John Newton, Corps of Engineers, of the results of examinations and surveys made under his direction with the view to improvement at the following localities, viz:

1. Sumpawaums Inlet, Long Island, New York.
2. Patchogue River, New York.

3. For water-way connecting Jamaica Bay with Cornell's Landing, New York.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY OF SUMPAWAUMS INLET, LONG ISLAND, NEW YORK.

UNITED STATES ENGINEER OFFICE,
New York, October 30, 1880.

GENERAL: The river and harbor act approved June 14, 1880, directs the survey of Sumpawaums Inlet, Long Island, New York, which, having been finished, I have the honor to submit my report.

The survey was executed by the party of Mr. Charles G. Weir, assistant engineer, acting under the general supervision of Mr. R. H. Talcott, assistant engineer, who received from this office his instructions as to the nature and scope of the examination and special points necessary for indicating the mode of improvement.

I transmit herewith the map and report of Mr. R. H. Talcott, which, in so far as it describes the kind of improvement and the reasons therefor, was prepared under my personal supervision.

It is not likely that diking or training walls will be required, and dredging alone would probably answer the purpose. The estimate to secure a channel of 5 feet in depth at mean low-water is about $24,000.

The testimony as far as we have it shows that the depth has been continuously diminishing for a number of years, which is an unfavorable feature for the permanence of the channel, whether improved by dredging alone, or a combination with training walls. Owing to the comparative absence of currents, the improved channel may retain an adequate depth for a number of years. On this point, however, there is no knowledge from experience for this locality which is available.

A copy of letter with inclosed report of Mr. William Provost, a resident of Babylon, to Hon. James W. Covert, member of Congress, and by the latter forwarded to me, accompanies this report. These papers and other items embodied in Mr. Talcott's report form the sources of available information in relation to the business interests and commerce of the neighborhood to be benefited by the proposed improvement.

Respectfully submitted.

JOHN NEWTON,
Colonel of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. R. H. TALCOTT, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
New York, October 29, 1880.

GENERAL: I have the honor to submit the following report on the survey of Sumpawaums Inlet, Long Island, with such information as I have been able to obtain in regard to the commerce and navigation of the same:

The accompanying chart shows the present condition of the inlet, and the work

proposed for the improvement of the channel. An estimate of the probable cost of the latter is appended hereto.

Sumpawaums Inlet is in the collection district of New York.

New York City is the nearest port of entry. The nearest light-house is Fire Island light, about six and one-half miles distant southeasterly.

The amount of revenue collected at New York City during the fiscal year is $131,812,349.89.

The amount of commerce and navigation to be benefited by the proposed improvement is unknown.

The amount of tonnage for the past year is unknown.

Sumpawaums Inlet is a tributary of the Great South Bay, and lies toward its western end. It is only an estuary and the supply of fresh water, which is large only after heavy rains, is stored in a pond and used for milling purposes. The water in the inlet is so shallow that only very light-draught boats can navigate it, and those now employed are nearly all pleasure boats for the use of summer residents. The expense of lightering the freights of larger vessels has driven them away, and all supplies are now brought by railroad, except those produced in the neighborhood.

The bed of the inlet for a greater part of its length is soft mud, varying in depth from two to four feet, and according to the best information obtainable, the water is growing shallower every year.

Outside the inlet except in shoal water near the shore, the bottom is all soft mud. Both the shores are marsh and unimproved, except near the head of tide-water and at the mouth.

The village of Babylon, which is at the head of navigation, has a population of about two thousand, but it is estimated that about five thousand inhabitants will be benefited by the improvement. Babylon is a great place of resort in summer, and has several mills and manufactories. From the wharf at the mouth of the inlet there is steamboat communication with Fire Island during the summer, and a horse-railroad carries passengers and freight from the steamboat to the Long Island Railroad depot in the village. The amount of capital invested in business is estimated at between $2,000,000 and $3,000,000, and the amount of business done annually at about $500,000.

The survey was made under my supervision by the party in charge of Mr. Charles G. Weir, assistant engineer, during the latter part of August and beginning of September. The plane of reference was determined by observing the tides at the steamboat dock during one full lunation of day tides, and to the plane of mean low-water as established by these observations all the soundings have been reduced. The shore line and topographical features, so far as shown, were obtained from a tracing of a plane-table survey made by the United States Coast and Geodetic Survey, which was kindly furnished by Capt. C. P. Patterson, the Superintendent.

The rise and fall of the tides being so small, the currents in the inlet are not perceptible.

The plan proposed for the improvement is to dredge a channel giving 5 feet at mean low-water, from about the head of tide-water to the bay. In the inlet the width of the proposed channel is estimated at 100 feet. At its mouth the width increases to 150 feet, and keeps that width until the 5-foot contour is reached.

The increased depth of the channel will allow steamboats and propellers of light draught to navigate the inlet and thereby contribute to the permanency of the improvement.

Very respectfully, your obedient servant,

R. H. TALCOTT,
Assistant Engineer.

Col. JOHN NEWTON,
Corps of Engineers, U. S. A.

ESTIMATE.

67,000 cubic yards dredging, at 30 cents	$20,100
Engineering, contingencies, &c	3,015
	23,115

COMMERCIAL STATISTICS.

BABYLON, *August* 4, 1880.

MY DEAR SIR: Yours of the 27th ultimo came promptly to hand, but owing to a pressure of business could not reply sooner, and I feel now that it is done very imperfectly. The fact is this improvement would be of incalcuable value, and any lengthy

memorial would not make the matter more manifest. Much of this information was sent with the other paper. Hoping that this will fill the bill,

I am, very respectfully,

WM. T. PROVOST.

Hon. JAMES W. COVERT.

LOCATIONS BENEFITED.

Town and village of Babylon, and the western part of the town of Islip.

POPULATION.

Population of the two towns to be benefited about 5,000.

TRADE.

It is very difficult to estimate this, for the reason the inlet has been gradually filling up for a number of years, and the cost of lighterage has driven the vessels out of the trade, and at present we are solely dependent upon the railroad, and the cost of transportation in this way is about the same as the tariff from New York to Buffalo; the one being 35 miles, the other 450 miles.

BENEFIT TO COMMERCE.

If the inlet is dredged properly there would be thousands of dollars paid to vessels for freight, at a saving of about 50 per cent. to the consumers.

CAPITAL INVESTED.

Capital invested in trade, between two and three millions, and the amount of business done annually, about $500,000.

OBJECT TO BE REMOVED.

Principally soft mud to the depth of from 2 to 4 feet, as shown by a map drawn by Jonathan Sammis, surveyor, and presented with application.

COMMENT.

The need of water communication is a want long felt in this community. We are at the mercy of railway monopoly, and the general feeling is that this retards our growth to a very material extent. It is the opinion of practical men this improvement can be made very quickly, and at little cost in proportion to the benefit accruing.

SURVEY OF PATCHOGUE RIVER, NEW YORK.

UNITED STATES ENGINEER OFFICE,
New York, October 30, 1880.

GENERAL: The river and harbor act approved June 14, 1880, directs the survey of "Patchogue River, New York," which having been finished, I have the honor to submit my report.

The survey was executed by the party of Mr. Charles G. Weir, assistant engineer, acting under the general supervision of Mr. R. H. Talcott, assistant engineer, who received from this office his instructions as to the nature and scope of the examination and special points necessary for indicating the mode of improvement.

I transmit herewith the map and report of Mr. R. H. Talcott, which, in so far as it describes the kind of improvement and the reasons therefor, was prepared under my personal supervision.

There is little or no current in the river, and dredging alone is recommended for the improvement as far down as the outlet into Great South Bay, beyond which, in order to preserve the channel, once formed, from the action of waves, lines of parallel dikes will be necessary.

The estimate to secure a depth of 6 feet at mean low-water by dredging in the river, and from its mouth to the 6-foot curve in the bay, is	$21,000
For diking from river to 6-foot curve in the bay	15,800
Engineering, contingencies, &c., 15 per cent	5,520
	42,320

The copy of letter of Mr. Charles R. Smith, sent herewith, and other items in Mr. Talcott's report upon the business interests and commerce to be benefited by the proposed improvement, embody all the available information on these points.

Respectfully submitted.

JOHN NEWTON,
Colonel of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. R. H. TALCOTT, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
New York, October 29, 1880.

GENERAL: I have the honor to submit the following report of the survey of Patchogue River, Long Island, with such information in regard to the commerce and navigation of that stream as I have been able to obtain. The accompanying chart shows the results of the survey and the works proposed for the improvement of the channel. An estimate of the proposed cost of the latter is also appended.

Patchogue River is in the collection district of New York.

New York City is the nearest port of entry. The nearest light-house is Fire Island light, about 14 miles distant southwesterly.

The amount of revenue collected at New York City for the past fiscal year is $131,812,349.89.

The amount of commerce and navigation to be benefited by the proposed improvement is about $150,000, and the tonnage for the past year about 1,500. The latter figures are from information furnished by Mr. Charles R. Smith and others, who are residents of Patchogue.

Patchogue River is a tributary of Great South Bay, which it enters not far from its eastern end; it has quite a large drainage area, the water from which is stored for milling purposes, by a dam a short distance above the navigable part of the stream. This dam has given way once or twice, and brought large quantities of sand and gravel into the lower section of the river.

The extreme shallowness of the water, both at the mouth and in the river, will admit of boats of only very light draught, and consequently the tonnage is very small, and though vessels drawing 6 feet can come within a short distance of the mouth the anchorage is so exposed and bad they cannot safely lie there in stormy weather.

The bed of the river is soft mud, and the eastern banks marshy. The greater part of the western bank is good firm ground and has been docked and improved. Outside where the depth is less than 6 feet the bottom is hard sand.

The village of Patchogue has a population of over 3,000; it is a place of summer resort, has several mills and manufactories, and a large fish and oyster trade, in which latter about 200 vessels are engaged. At present nearly all supplies, except those which the neighborhood furnishes, are brought by railroad.

The survey was made under my supervision in the month of September, by the party in charge of Mr. Charles G. Weir, assistant engineer. Tides were observed at the mouth of the river, during progress of the survey. The mean low-water reading of the tide-staff, to which all the soundings have been reduced, was obtained by a line of levels connecting the tide-staff with a bench-mark established by the United States Coast and Geodetic Survey. The location and elevation of this bench-mark were kindly furnished by Capt. C. P. Patterson, the Superintendent, to whom we are also indebted for a tracing showing the shore line and topography in that vicinity.

Some years ago an improvement of the mouth of the river was attempted by means

of a dike, but this being a light structure, it has been badly damaged by ice and storms, and only a small section of it is of any use at present. The improvement proposed is to dredge a channel 100 feet wide and giving 6 feet at mean low-water all the way from the present head of navigation to the bay. In the river, as there is such a small rise and fall of tide, there are no perceptible currents, and a dredged channel will maintain itself for a long time, but outside, owing to the drift of the sand, a dike on the west side of the proposed cut will be necessary for its full length and probably a shorter one on the east. The dikes proposed are to be of carbolized timber according to the general plan and to be filled with rubble stone. The width from out to out of piling will vary from 5 to 7 feet, according to the depth of the water.

The lines of dredging and diking as proposed are shown in blue upon the chart.

Very respectively, your obedient servant,

R. H. TALCOTT,
Assistant Engineer.

Col. JOHN NEWTON,
Corps of Engineers, Brevet Major-General, U. S. A.

ESTIMATE.

From head of navigation to mouth of river:		
46,000 cubic yards of dredging, at 30 cents		$13,800
From mouth of river to 6-foot contour:		
1,700 linear feet of diking, at $6	$10,200	
700 linear feet of diking, at $8	5,600	
24,000 cubic yards of dredging at 30 cents	7,200	23,000
Engineering contingencies, &c		5,520
		42,320

COMMERCIAL STATISTICS.

PATCHOGUE RIVER, *October* 22, 1880.

DEAR SIR: In answer to a communication from Mr. R. H. Talcott, assistant engineer, I answer as follows:

The amount of commerce to be benefited by the proposed improvement in Patchogue River is about $150,000 at the very lowest estimate, and the number of tons engaged and doing business on said river during the past year is about 1,500.

Yours, respectfully,

CHARLES R. SMITH.

General JOHN NEWTON.

EXAMINATION AND SURVEY OF THE WATER-WAY CONNECTING JAMAICA BAY WITH CORNELL'S LANDING, IN THE STATE OF NEW YORK.

UNITED STATES ENGINEER OFFICE,
New York, December 18, 1880.

GENERAL: I have respectfully to report upon a survey and examination of the water-way connecting Jamaica Bay with Cornell's Landing, in the State of New York, as provided in the river and harbor act approved June 14, 1880.

The survey was made by the party of Mr. C. G. Weir, assistant engineer, under the supervision of Mr. R. H. Talcott, assistant engineer, who was furnished from this office with specific instructions for the collection of such data as would have an important bearing upon a practicable scheme of improvement; and, amongst others, to estimate

the contents of a marsh tidal basin existing north of the dam at Cornell's Landing.

The chart of the survey and Mr. Talcott's report, herewith submitted, furnish all the material facts needed in the case.

The navigable depth at mean low-water is, in the creek, less than 1 foot. From its mouth to the 6-foot curve in the bay, the depth, though deeper generally, is diminished by a shoal to 1 foot. The mean rise and fall of tides is $4\frac{1}{2}$ feet.

It appears from information collected from various parties that the depth at a former period was greater than at present; and its decrease is by them referred to the land waters having been diverted from their natural course into the reservoirs of the water-works of Brooklyn.

The tidal reservoir of the body of the creek is very small, even with the addition of the marsh reservoirs north of the old mill-dam. It would be expedient, however, that the remains of the dam be removed, to obtain a freer flow beyond, with the probable useful effect of affording a place of deposit for the silt brought up by the flood-tide, and of better preserving the depth at the Landing.

What appear to embarrass the navigation of the creek fully as much as the want of water are the sharp bends in connection with a width generally not much exceeding 60 feet.

Considerable relief would be afforded, besides removing the remains of the dam, by straightening the course of the channel, and dredging, so as to afford a uniform depth at mean low-water of at least 2 feet. The estimated cost for these operations would be about $30,000, and a reasonable degree of permanence would be secured.

A depth of 6 feet at mean low-water from the 6-foot curve of the bay to the Landing could be secured by dredging the creek, by diking and partial dredging along the line from the mouth of the creek to the 6-foot curve of the bay, by straightening the course of the creek and removing the remains of the dam, at an estimated cost of $94,000.

As the velocity of the tidal currents would be very little, a reasonable degree of permanence would be maintained.

Cornell's Landing is in the collection district of New York.
New York City is the nearest port of entry.
The nearest light-house is Sandy Hook light.
The amount of revenue collected at New York City during the past fiscal year is $131,812,349.89.

The present commerce by water which would be benefited by the proposed improvement is reported as very small. The desire of escaping the alleged high charges of freight by rail seems to constitute the basis of the demand for an improvement of navigation.

I respectfully refer to copies of papers furnished as to the resources of the neighborhood, marked A and B, and appended.

Respectfully submitted.

JOHN NEWTON,
Colonel of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. R. H. TALCOTT, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
New York, December 15, 1880.

GENERAL: I have the honor to submit the following report of the survey of the water-way from the channel of Jamaica Bay to Cornell's Landing, New York, with such information in regard to the commerce and navigation of the same as I have been able to obtain.

The accompanying chart shows the present condition of the water-way, and the works proposed for the improvement of the same. An estimate of the probable cost of these works is appended hereto.

Cornell's Landing is in the collection district of New York.

New York City is the nearest port of entry.

The nearest light-house is Sandy Hook light.

The amount of revenue collected at New York City during the past fiscal year is $131,812,349.89.

The amount of commerce and navigation to be benefited by the proposed improvement is unknown.

The total tonnage of the past fiscal year is reported to be about 1,000 tons. Cornell's or Three-mile Creek is a tributary of Jamaica Bay, and is the only water-way by which vessels can approach the village of Jamaica. The channel of the navigable part of the creek is through salt marsh, and has several very sharp bends. At Cornell's Landing, the head of navigation of the creek, there are the remains of an old dam and tide-mill, which has been allowed to fall into decay. Above this dam there is quite a large area of low marsh land, which is overflowed by the ordinary tides, and this area was used formerly for the storage of the water for the mill-power. The dam is now very dilapidated and obstructs the full flow of the tides into the basin above. Before the construction of the Brooklyn water-works there was quite a good supply of fresh water, but this had been diverted, and now the supply is very limited. At the time of the building of the Brooklyn water-works most of the materials used for the construction of the dams, conduits, &c., were brought by water to Cornell's Landing, and it is said by those long resident in the vicinity that previous to the diversion of the fresh water and the disuse of the tide-mill the depth of water in the channel of the creek was considerably greater than at present, and that quite a number of schooners were engaged in bringing coal and fertilizers to Cornell's Landing. Now only one or two small sloops are used in this traffic. In addition to the small depth of water the sharpness of the bends in the creek form a serious obstruction to navigation, and several times canal-boats and barges have been sunk in the attempt to get round them while loaded with material for the Brooklyn water works.

The proposed improvement is only intended to relieve the present difficulties in the navigation by straightening the creek in places where the channel is excessively crooked by cutting new channels through the marsh. The banks of the creek are now so firm and stand so well, it is to be supposed that the new channel will not require any protection to the slopes, but an allowance is made for a partial protection in the estimate.

It being very doubtful whether a much greater depth at mean low-water than there is at present can be maintained for any length of time, it is not proposed to deepen the channel where there is now as much as 2 feet, or to make any improvement in the channel from the mouth of the creek to deeper water in Jamaica Bay, except sufficiently to give a uniform depth of 2 feet at mean low-water, this being considered unadvisable until by experiment it is found that the depth in the creek can be permanently improved. Having the above in view, it is proposed to remove the remains of the old dam, so as to give a clear water-way for the tides to flow in and out of the overflowed area above it. From a point just below the end of the dock at the Landing, instead of following the present bed of the creek, it is proposed to cut a new channel through the marsh and enter the old channel again below the bend. This cut will be about 500 feet long and 60 feet wide. At the next bend below a cut about 650 feet long and 70 feet wide would avoid two elbows in the channel. Where this cut enters the old channel the creek takes another sharp turn. Instead of using the old channel a cut of 450 feet length and 70 feet width is proposed, which will enter the old channel at the mouth of the creek. These new channels are to be dredged to the depth of 2 feet at mean low-water, which, with the rise of tide, will give over 6 feet at high-water, and admit loaded canal-boats to pass.

The accompanying chart is compiled from soundings taken by the party under the charge of Mr. C. G. Weir, assistant engineer, during the past season, and from a tracing of a survey made by the United States Coast and Geodetic Survey in July last, which has been kindly furnished by Capt. C. P. Patterson, the Superintendent.

ESTIMATE.

Cut through bend below landing:		
3,000 cubic yards dredging, at 40 cents	$1,200 00	
6,000 cubic yards dredging, at 30 cents	1,800 00	
400 linear feet half dike, at $5	2,000 00	
100 linear feet full dike, at $8	800 00	
		$5,800 00
Cut through second bend:		
4,000 cubic yards dredging, at 40 cents	1,600 00	
10,000 cubic yards dredging, at 30 cents	3,000 00	
600 linear feet half dike, at $5	3,000 00	
250 linear feet full dike, at $8	2,000 00	
		9,600 00
Cut through bend at mouth:		
2,500 cubic yards dredging, at 40 cents	1,000 00	
7,000 cubic yards dredging, at 30 cents	2,100 00	
400 linear feet half dike, at $5	2,000 00	
200 linear feet full dike, at $8	1,600 00	
		6,700 00
Deepening old channel to 2 feet at mean low-water:		
13,000 cubic yards dredging, at 30 cents		3,900 00
		26,000 00
Contingenies, engineering, &c		3,900 00
		29,900 00

Respectfully submitted.

R. H. TALCOTT,
Assistant Engineer.

Col. JOHN NEWTON,
Corps of Engineers, Bvt. Maj. Gen., U. S. A.

COMMERCIAL STATISTICS.

A.—LETTER OF MR. JOHN O'DONNELL.

JAMAICA, *August* 6, 1880.

DEAR SIR: In reply to yours of the 27th ult., in reference to the benefits that would accrue from the improvements proposed of the Three-Mile Mill Creek to Cornell's Landing.

The benefit would be a large quantity of freight consisting of coal, lumber, brick, lime and fertilizers would be shipped by this route, which would be a great benefit to the inhabitants of the village of Jamaica, which are 4,500. It would benefit Springfield, with a population of 1,500, and a large district in the southern part of the town of Jamaica, with a population of about 3,000. The town of Jamaica is the most productive town on Long Island, and many of the farmers would avail themselves of this way of getting much of their bulky produce to market. The freight on coal over the Long Island Railroad is $1 per ton, a distance of only 10 miles. Coal and all this kind of heavy freight could be unloaded at Cornell's Landing from the barges and canal boats that now deliver it at Hunter's Point. Shippers complain that there is a great detention at Hunter's Point during the summer months on account of the railroad companies. Locomotives are engaged in running passenger trains to the different watering places. They find it very difficult to get freight through even with paying these heavy charges. With this proposed improvement a great deal of this detention would be avoided.

This creek has been used for light-draught vessels of from 30 to 50 tons for years; at that time a tide mill was in operation at the head of navigation, and the water being held back in the mill-dam until low tide (when the mill was operated) kept the mud and sediment washed out. Since that time the mill has been neglected and run into disuse, and as a result the creek is filling up.

There are some very sharp bends in it, the curve being so short that a canal-boat or barge cannot be towed round—some of this class of vessels having sunk at these points at the time of the building of the Brooklyn water-works. The vessels were loaded with building material for the conduit line, gate-houses, dams, &c.

By straightening the creek where these curves are, and dredging out the mud and placing it in the bank, the creek could be made navigable for large vessels, the mud and sediment placed in the bank could be utilized for the building of docks and wharves, and by the building of a small dam where the old mill in the tide-water could

be held occasionally, and at low water the gates could be raised, and by this means the creek could be kept open for all time, in fact the letting out of the tide-water in this manner would deepen the creek and improve the navigation of it.

In addition to the above benefits that would accrue from this improvement there are a large and increasing portion of our population who enjoy traveling by water; a sail to them is one of the greatest and most health-giving luxuries. With the advantages that this improvement would give there would be a large number of yachts and light-draught steamboats engaged in carrying passengers to Rockaway Beach, Coney Island, on sailing excursions, fishing excursions, &c.

Hoping you may glean something from the above hastily written matter that will aid in this very worthy enterprise,

I am, with great respect, yours, &c.,

JOHN O'DONNELL.

Hon. JAMES W. COVERT.

B.—LETTER OF MR. SCHUYLER HAMILTON.

JAMAICA, LONG ISLAND,
October 26, 1880.

DEAR SIR: I received your note of October 21, 1880, on Saturday last, October 23.

I asked one of my neighbors who has been long resident here to procure the data you desired.

Formerly, before the head of water which emptied into Cornell's, or Three-Mile Mill Creek, was diverted to supply Brooklyn, there were many sloops and schooners came to the landing bringing large quantities of ashes to the farmers. All the materials for constructing the water-works here were thus brought. Now, owing to the filling up of the creek, this has dwindled down to two vessels, transporting, as I am informed, about 1,000 tons per annum.

The benefits anticipated are facilities for supplying a large portion of the heavy freights, coal, lumber, &c., to the village of Jamaica, besides enabling the farmers of the vicinity to procure manure from New York City at greatly reduced rates.

The expectation if the creek is improved is to use small propellers towing barges, and that thus once opened the water-way would be kept free.

It is not possible to make an estimate as to what the traffic would amount to. Some think it would be quite heavy; I am not so well assured of this. The population of Jamaica is 10,200; 5,000 village of Jamaica, 5,200 outside of it.

There can be little doubt about a regular increase of the traffic from year to year if the water-way is once re-established. Such, at least, I am informed, is the opinion of many of the most substantial citizens here. I have not been long resident here; I am sorry I cannot make a better show as to the matter.

Very truly, yours,

SCHUYLER HAMILTON.

R. H. TALCOTT, Esq.,
Assistant Engineer.

WAREHAM HARBOR AND POTOWOMUT RIVER.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of surveys of Wareham Harbor and Potowomut River.

JANUARY 5, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 3, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Eingineers, dated the 22d ultimo, and accompanying copies of reports from Lieut. Col. G. K. Warren, Corps of Engineers, upon surveys of Wareham Harbor, Massachusetts, and Potowomut River, Rhode Island, made in compliance with the provisions of the river and harbor act of June 14, 1880.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., December 22, 1880.

SIR: To comply with requirements of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Lieut. Col. G. K. Warren, Corps of Engineers, of the results of surveys for improvement made under his direction at Wareham Harbor, Massachusetts, and Potowomut River, Rhode Island.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brigadier and Brevet Major-General.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY OF WAREHAM HARBOR, MASSACHUSETTS.

ENGINEER OFFICE, UNITED STATES ARMY,
Newport, R. I., December 13, 1880.

GENERAL: I have the honor to send herewith a report and map of the survey of Wareham Harbor, Massachusetts, assigned to me under the act of Congress passed at its last session. This work has been done under my direction by Assistant J. P. Cotton.

The map and report fully show the present condition of the harbor. There has been some shoaling at the "upper bar," but the general result is a very favorable exhibition of an improvement that has been as permanent as could reasonably be expected.

Passage in and out of this harbor is altogether dependent upon sails, and not only is there a want of increased depth where the new shoal is formed, but some further widening and straightening to permit of "beating" in and out.

The reliance is upon a high-water depth of 13 feet (the rise being 4 feet), and this lets in the largest coasting schooners and having considerable length.

It is also felt to be very desirable to secure a permanence to Long Beach, which protects the entrance to the harbor. This our experimental work there shows to be feasible if made with substantial material.

Estimates are submitted for both these objects:

(1.) For work on Long Beach	$15,000 00
For dredging to deepen and widen	23,050 00
For dredging to remove middle ground	6,000 00
	44,050 00

Wareham is in the New Bedford collection district. The amount of revenue collected during the fiscal year ending June 30, 1880, was $15,842.69.

The interests affected by or concerned in the improvement of this harbor are fully set forth in Mr. Cotton's report.

Very respectfully,

G. K. WARREN,
Lieutenant-Colonel Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. JOSEPH P. COTTON, ASSISTANT ENGINEER.

ENGINEER OFFICE, UNITED STATES ARMY,
Newport, R, I., December 1, 1880.

GENERAL: I have the honor to submit the following report on the survey of Wareham Harbor, Massachusetts, provided for in section 2 of the river and harbor act approved June 14, 1880.

The field work of the survey was completed between August 12 and August 20, with the assistance of William H. Lawton, jr., and J. A. Curtis, inspectors.

GENERAL DESCRIPTION OF THE HARBOR.

This harbor is an estuary of Buzzard's Bay. It is about 13 miles east of New Bedford, and 6 miles west of Monumet, the southern end of the proposed Cape Cod ship canal.

It is about 3 miles in length, with a width varying from 200 feet to more than ½ a mile.

Into this estuary empty Agawan River at its head, draining about 45 square miles; Broad Marsh River on the west side, draining 4 square miles; and Weweantic River on the west side, below Long Beach, draining 95 square miles.

A small stream, called Crooked River, draining but 1 square mile, empties into it from the east.

The shores for the most part are low, with extensive marshes that are submerged by spring tides.

The harbor, commencing at the rail and highway bridges at Wareham, which, not

being provided with draws, prevent any navigation above them except by barges, is about 200 feet wide. At the south end of the Franconia Iron Company's wharf, 1,400 feet further down, it is 400 feet wide; from this point it opens out into a bay 2,000 feet in width. Near the mouth of Broad Marsh River it narrows to about 900 feet, which width it retains for about 1,200 feet, when it again widens into a bay more than ¼ a mile wide.

This bay is separated from Buzzard's Bay by Long Beach, which extends from the east shore out about 2,000 feet. This beach is composed of sand. At low-water level the sand is coarse, with gravel and pebbles; above low-water it is fine, and easily moved by wind or waves. The width of the beach at low-water varies from 200 to 800 feet; at ordinary high-water a narrow strip of sand, not more than 100 feet wide in the widest part, is above water. At high-water of spring tides the whole beach is submerged.

Outside of this beach is an extensive shoal or flat, the curve of 6-foot depth being ¼ of a mile distant at the east end, and more than ½ a mile at the west end. The water on the inside of this beach is bold; at the west end of it a vessel drawing 9 feet can at low-water approach within 50 feet of the high-water line.

PREVIOUS SURVEYS.

A survey of this harbor was made in 1870, under direction of the harbor commissioners of Massachusetts. The report upon this survey appears in their Fifth Annual Report, 1871, and is as follows:

"During the past year the board has had made a careful survey of Wareham River, with a view to the establishing proper harbor lines and the determination of the causes that have led to the formation of shoals near the wharves. They also have in mind to apply to Congress for the removal of the bar that has formed at the mouth of the river, should the results seem to justify such action. The great importance of this port, and the extensive manufactures carried on there, call for a serious effort to improve the navigation of this river, upon which the prosperity of the place almost wholly depends."

In their next annual report a comparison is made between the condition of the harbor in 1845, as shown by the United States Coast Survey, and by their survey of 1870. This comparison showed that marked changes had taken place in the upper part of the river. Of this they say: "It can hardly be questioned that the construction of the solid pier between the west side of the river and the sluice-way, or bay, through which scows and boats now pass, and the solid embankment of Cape Cod Railroad on the west side of the river, together with the stone ballast which has been thrown around and between the piers of both the railroad and town bridges, have contributed mainly to the injury sustained, and have caused the violent and unequal currents which have dug out, as it were, the deep holes above, between, and below the bridges, and thrown up the abrupt and injurious shoals beyond them."

The injurious effects of the bridge structures they think is "confined to about the first 400 feet below them."

In regard to these they say: "While there is no doubt that the physical condition of this upper portion of the river could be improved by the removal of the railroad embankment, the whole, or a part, of the solid pier near the center of the river, the stone ballast from under each of the bridges, and the reconstruction of the railroad piers, it would be a measure of doubtful economy. It is the opinion of the board that the river could be improved, and the improvement maintained, for a much less sum than it would take to remove and remodel the objectionable portions of the existing structures."

Harbor lines were established by the board on both sides of the river from the bridges at the upper end to Barney Point.

In 1871 a survey was made under direction of General George Thom, United States Engineers, in accordance with a resolution of the House of Representatives. The report upon this survey, including estimates for improving the channel, was published in the Annual Report of the Chief of Engineers for 1872, pages 973–976.

The map of the survey of the harbor made in 1870 by Professor H. L. Whiting for the harbor commissioners was used as a basis for the survey of 1871, under General Thom. Additional soundings were taken and current observations made on the flood and ebb tides at the railroad bridge and at Quahang Bar. The soundings were reduced to the plane of mean low-water established in 1870.

The plan of improvement estimated for and recommended by General Thom was dredging a channel 250 feet wide and 9 feet deep at mean low-water through Quahang Bar, and straightening and widening the channel through the "upper bar"; estimate was also made for removing a large bowlder near the mouth of Weweantic River, the whole to cost $45,000.

HISTORY OF IMPROVEMENTS MADE.

In 1872 Congress made an appropriation of $10,000 for the improvement of this harbor; another appropriation of $10,000 was made in 1873; $10,000 in 1874, and $10,000 in 1875, making a total of $40,000. Dredging was commenced in 1873 and com-

pleted in 1876, making a channel from 250 to 300 feet wide and 10 feet deep at mean low-water from Long Beach around Quahang Bar; thence, by cutting off shoal points, a least width of 200 feet was made to the "upper bar." Thence to the bridge, at the upper end of the harbor, the width decreased to 100 feet; the depth made in this part was 9 feet at mean low-water.

During the progress of the improvement in 1873 a detailed survey of the harbor was made, as the maps of previous surveys were not sufficiently in detail to serve as a guide in carrying on the works of improvement. This survey showed that there was less depth of water in the harbor than had been previously supposed.

The report of this survey was published in the Annual Report of the Chief of Engineers for 1874, pages 216–220.

On the completion of the improvement above described there was about $1,700 remaining on hand. With this an attempt was made, in 1877, to catch the sand brought along the south side and over Long Beach into the harbor, by building a sand-catch fence. This fence was of a single row of cedar trees on the higher parts, and on the lower parts of two rows of posts 4 feet apart, connected by stringers and ties placed 1 foot below the surface of the sand. The space between these two rows of posts was filled with brush to about 2 feet above the general surface, this brush being held in place by small stone.

In a storm, accompanied by a very high tide, in the following October, a portion of this fence was washed away. In July, 1878, it was rebuilt, and loaded with larger stone.

The removal of the bowlder in Weweantic River, estimated for in the report of General Thom, was not undertaken because there was no longer any demand for it.

SURVEY AND MAP.

The survey of this season was confined to the channel dredged in 1873–1876, and to the part outside of Long Beach not included in previous surveys. A map of the harbor from the bridges to the "four buoys," outside of Long Beach, on a scale of 200 feet to an inch, accompanies this report. This map shows the present condition of the channel, the depth on the flats and in coves from survey in 1873, the harbor lines as established by the harbor commissioners in 1871, and the channel desired by those interested in the commerce of Wareham and for which estimates are made.

PRESENT CONDITION OF THE HARBOR.

Beginning at the bridges at the upper end of the harbor we find in the deep hole, which is undoubtedly caused by the obstruction formed by the embankments and piers and riprap protection of the bridges, a depth of 26 feet at mean low-water, the same as in 1873. Immediately below this the shoal with the dredged channel along the wharves to the west has a depth of but 4.1 feet on it. This shoal has increased in size and now encroaches upon the channel, leaving a width of but 70 feet with 8 feet depth.

From this shoal to the "upper bar," which begins about 900 feet below the Franconia Iron Company's wharf, the dredged channel has about the same general width and depth as when completed. In some places it has widened by scour and in some narrowed by deposit.

The channel dredged through the "upper bar" 150 feet wide and from 9 to 10 feet deep at mean low-water has filled up so that in the shallowest place there is but little more than 7 feet depth at mean low-water. This filling is over the whole width of the channel and for 600 feet along it.

From this bar to the entrance of the harbor at Long Beach but little change has taken place in the dredged channel.

At Quahang Bar it has narrowed somewhat by filling in from the bar or northwest side of the channel and widened on the opposite side by scour.

There is now a channel not less than 100 feet wide and 9 feet deep at mean low-water from the entrance to the "upper bar." The mean rise of tide is about 4 feet, so that vessels drawing about 13 feet can go to the "upper bar" at mean high-water, but cannot cross it drawing more than 11.5 feet.

The fence on Long Beach, built to catch the moving sand, is in very good condition and for much of its length sand has collected about it nearly up to the level of high-water. On the part of the beach above ordinary high-water the sand is blown about by the wind so that its height is not much increased by the fence. A storm from the south will fill the sand in along the fence that will be blown out into the water by a northerly wind.

PROPOSED IMPROVEMENT.

From a consultation with those interested in the navigation of this harbor I learned that the depth of the channel made in 1873–'76 was deemed by them sufficient for the class of vessels likely to be employed in the commerce of the place if that depth can be maintained.

The width of channel made, they say, is two small to allow vessels to beat in or out, and for this reason valuable time is lost by vessels that come to this port.

This want of width for beating is particularly felt above Barney Point and through the "upper bar." Some trouble is found in getting through the channel at Quahang Bar, but less than in the upper part.

To meet these requirements will require that the channel through the "upper bar" be made 350 feet wide. The entire removal of the "upper bar" is wanted by those interested, so as to make the pocket of deep water to the east, now used for anchoring boats in, available for beating in, but the harbor lines, as established, place part of this pocket of deep water inside of the pier-head line.

Estimate is made for dredging the entire space on the "upper bar" east of the present channel to the harbor line on the east side. This would give a width of 350 feet. This is a greater width than is proposed below, and will require the removal of a large amount of material. We have therefore made an estimate for a channel 200 feet wide through this bar. Thence to Barney Point to widen and straighten the channel to 200 feet and 10 feet depth. From Barney Point to the entrance of the harbor to make the channel 250 feet wide in its narrowest part and 10 feet deep.

A depth of 10 feet is made so that when the sides of the cuts are washed down by the waves, and by vessels striking them, there will still be a least depth of 9 feet.

The fence already built on Long Beach, seems to have determined the feasibility of holding and building up this beach above high-water, and in that way cut off one of the sources of supply of sand that now finds its way into the harbor.

The growth of the shoal, of which this beach is the inner margin, and its encroachment upon the lower part of the harbor, have been considerable within the memory of those who sail out of the harbor. A map of Wareham, made by S. Bourne in 1832, shows a wide opening near the eastern shore, and a shoal outside of it. Through this opening boats went in and out to the fishing grounds.

This map does not give the depth of water. The map of the United States Coast Survey, made in 1845, is the earliest one on which the depth of water is shown. Since that date the filling has been going on slowly, but the beach is not likely to become permanent unless it is raised above storm tides and the sand held against the action of the winds by vegetation.

To do this it will be necessary to build a sand-catcher on the site of the present fence; this to be of brush loaded with stone; it should be built above storm tides. From this, spurs should be built on the south side; these would not require to be so high or strong as the main line. They should be built by beginning at the lowest point of the beach and building one at first. When the sand fills out to the end of it another may be built, and so on until the whole beach is widened and raised. As soon as any portion of the beach is above spring tides, it should be planted with beach grass to prevent the sand being blown away.

Some complaint is made of the narrow channel at the "four buoys," about ¾ of a mile below the "beach." An examination of it showed a channel 12 feet deep at mean low-water, with a least width of 125 feet, with bowlders on either side of it.

We could not learn that any serious trouble had been experienced here, and as it is better than we propose to make the channel further up the harbor, no estimate is made for its improvement.

Pilots find some trouble in coming into the harbor in thick weather or near night from their inability to see the westerly end of Long Beach. If they cannot see it and get out of their course to the eastward they get ashore on the Long Beach flats. It is thought that a "day beacon" should be built on the west end of the "beach," and thus this danger avoided or lessened.

ESTIMATES.

First estimate:

Dredging 60,000 cubic yards from channel near bridge and through "upper bar," 350 feet wide, mud and sand, at 25 cents	$15,000 00
Dredging 15,000 cubic yards, in widening the channel from "upper bar" to Barney Point, mud and sand, at 25 cents	3,750 00
Dredging 24,000 cubic yards of sand, in widening the channel at Quahang Bar	6,000 00
Removal of bowlder from channel upper side of Quahang Bar	300 00
For holding Long Beach, 2,000 cords of brush, in place, at $2	4,000 00
4,0 0 tons of stone on beach, at $2	8,000 00
Building spurs, 20, at $100	2,000 00
Planting beach	1,000 00
Add for contingencies	4,000 00
Total	44,050 00

Second estimate:

Same as the first, except the channel through the "upper bar" is 200 feet wide instead of 350.

Dredging 36,000 cubic yards from channel near bridge and through "upper bar"	$9,000 00
The other items same as in first estimate	25,050 00
	34,050 00
Add for contingencies	4,000 00
	38,050 00

The commercial interests of Wareham, which are largely dependent upon water transportation to this port, are fully set forth by Gerard C. Tobey, esq., of Wareham, as follows:

"The registered tonnage of sailing vessels owned in and hailing from Wareham in 1879 aggregated above 6,000 tons. The harbor is, by its railway facilities, a seaboard distributing point for inland towns and for Cape Cod. Steamboat connection is made here with summer resorts in Buzzard's Bay; and upon the wharf tracks of the Old Colony Railroad Company, cargoes are received and delivered directly from and into vessels lying in their berths.

Wareham is identified among the localities of the United States which were earliest engaged in the fabrication of iron. In the first part of the present century the town had attained importance as the seat of thriving manufactories of iron rods, forgings, hollow-ware, and cut nails. These manufactures and kindred enterprises still constitute the principal industry of the place. In colonial times the iron was obtained from the vicinage, and was worked with charcoal, but in later days the coal was mostly imported from Nova Scotia. Now, the coal and iron for the manufactories of Wareham are brought from Atlantic States, and a very large portion of the supply is freighted by water in vessels of 150 to 600 tons burden. About one-fourth of the manufactured products are shipped away by water, the remainder (as well as a portion of the supplies) receiving transportation by railroads.

In the recent depression of business generally, these iron-mills have not run steadily, although their productive capacity has been increased by additional steam-power. The tonnage of supplies brought by water to these works in twelve months, and some other commerce of the port, appears in the following table in gross tons:

Name.	Received by water.			Total gross tons required annually if running at—	
	Merchandise.	Tons.	Total.	Ordinary capacity.	Maximum capacity.
Tremont Nail Company, year ending October, 1880.	Coal	10,895			
	Iron	4,000			
	Ore	1,587			
	Fire-brick, &c	238			
			16,720	20,000	35,000
Franconia Iron and Steel Company, year ending April, 1880.	Coal	8,200			
	Iron	4,000			
	Ore	1,000			
	Fire-brick, &c	450			
			13,650	25,000	40,000
Wareham Nail Company, April, 1880		3,200	3,200	10,000	13,000
Ellis Foundry Company, October, 1880.		1,000	1,000	1,200	2,000
Parker Mills (idle)	Unemployed			10,000	20,000
Agawam Rolling Mill and Factory	do			10,000	10,000
Other commerce (inward), annually, 1879–1880.	Eastern lumber	1,200			
	Grain	5,000			
	Hard coal	3,000			
	Shells, fish, &c	750			
			9,950		
Other commerce (outward)	Furnace sand	10,000			
	Iron products	2,500			
	Cord-wood, &c	500			
			13,000		
Total			57,520	76,200	120,000

Wareham is a port of delivery.

It is in the New Bedford collection district, and New Bedford is the nearest port of

entry. The amount of revenue collected during the fiscal year ending June 30, 1880, was $15,842.69.

Respectfully submitted.

JOSEPH P. COTTON,
Assistant Engineer.

Bvt. Maj. Gen. G. K. WARREN,
Lieutenant Colonel, Corps of Engineers, U. S. A.

SURVEY OF POTOWOMUT RIVER, RHODE ISLAND.

ENGINEER OFFICE, UNITED STATES ARMY,
Newport, R. I., December 11, 1880.

GENERAL: I forward herewith the report and map of the survey of Potowomut River, Rhode Island, assigned to my charge by you under the law passed at the last session of Congress, and made by Assistant H. A. Bentley.

The survey was asked for, for the purpose of making an estimate of the cost of deepening the water to 6 feet at mean low-water over the bar at the mouth, and make the channel 150 feet wide. The present depth is about 2½ feet at mean low-water. The dredged channel would be about 2,500 feet long. There are also a few rocks to be removed.

It is estimated that it will cost $11,550 to make a depth of 6 feet at mean low-water, and $5,587.50 to make a depth of 5 feet. The mean rise of the tide is about 4½ feet. Vessels drawing 11½ feet will be able to pass to "Hope Lands" Landing, about ¾ of a mile above the mouth, when the improvement is made.

The navigation to be benefited is that of vessels bringing ashes and other fertilizers and ice, together with small boats and yachts. The region is a rich agricultural one, without manufactories or through travel.

It is in the Providence collection district, and that place is the nearest port of entry.

The amount of revenue collected there for the year ending June 30, 1880, was $405,652.73.

Very respectfully,

G. K. WARREN,
Lieutenant-Colonel Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. H. A. BENTLEY, ASSISTANT ENGINEER.

ENGINEER OFFICE, UNITED STATES ARMY,
Newport, R. I., October 28, 1880.

GENERAL: I have the honor to submit the following report on the survey of the Potowomut River, Rhode Island, authorized by Congress at its last session (see section 2 of river and harbor appropriation acts, approved June 14, 1880).

DESCRIPTION OF THE RIVER AND LOCALITY.

The Potowomut River is an estuary of Narraganset Bay, situated about 13 miles north-northwest of Newport, and extends in from the west shore of Narraganset Bay a distance of about 3 miles, where its name is changed to Hunt's River. Hunt's River is formed by a number of small streams, all within the limits of Rhode Island; its drainage area is about 40 square miles. Coweset Bay, the entrance to the harbor of Greenwich, is situated about half a mile north of the mouth of the Potowomut, with

Sandy Point extending out into Narraganset Bay between the two. The point of land between Greenwich Harbor and Coweset Bay and the Potowomut River is known as Potowomut Neck, a beautiful farming country, protected at its east end by a substantial sea-wall built at private expense.

The other or south side of the river is higher ground, rising abruptly at the river to a height of about 30 feet at Bluff Point, where its greatest elevation is obtained.

SURVEY.

About 1½ miles of the river from its mouth were surveyed; that part of the river above being shoal and no improvement desired, was not surveyed.

A traverse line was run along the north shore to the second wharf, which is at a point where the river narrows to a width of 90 feet, opening into wide bays above and below. Along this line the topography of the bank was taken, and stations were established along it for the location of soundings and triangulation.

Soundings were made off the mouth of the river for a distance of ½ a mile from shore, which carried the survey out to where there is a depth of 10 feet at mean low-water; soundings were also made along the channel of the river as far as the traverse line extended. The flats on either side of the channel were not regularly sounded, as they were mostly bare at low-tide.

The results of the survey are shown on the map, scale 200 feet to an inch, which accompanies this report.

TIDES.

The mean low-water plane to which the soundings are referred, and the mean rise and fall of tide, were determined by simultaneous observations made here and at Providence.

At the time these observations were made the rise of tide was 4.7 feet at Providence, which is the mean rise and fall lately adopted by us there. The rise at Potowomut River at the same time was 4.5 feet, which is taken and used as the mean rise and fall. Low-water at Providence on the same day was 0.5 foot above mean low-water, and at Potowomut it is assumed that the low-tide bears the same relation to mean low-water as it does at Providence. The correctness of this determination is confirmed by the United States Coast Survey tide tables, which give the mean rise and fall at Greenwich (3 miles away) as $4\frac{5}{10}$. At Wickford, 7 miles nearer the ocean, the mean rise and fall is $4\frac{3}{10}$ feet. At Newport, near the ocean, it is only $3\frac{9}{10}$ feet.

PROPOSED IMPROVEMENT AND ESTIMATES FOR IT.

It was ascertained by consultation with those interested in this work that a channel with a depth of 6 feet at mean low-water and a width of from 150 to 200 feet across the bar at the mouth of the river, with the removal of Euston's Rocks, was all that was desired or needed.

On the accompanying map two channels, having a width of 150 feet each, have been laid out. The width of 150 feet rather than the one of 200 feet is taken because it is fully as wide as any part of the channel above, which is large enough for the requirements here. One of these channels is drawn on a straight line connecting the nearest point of the 6-foot contour line outside the bar with the contour having the same depth on the inside. The other proposed channel follows the line of the present channel to the pile of loose stone formerly used as a transfer landing, where it turns and crosses the bar to the nearest portions of the 5 and 6 feet contour lines, outside. If any improvement is to be made here this latter line is deemed the better because it is in the line of the greatest tidal flow and would not be so liable to being filled up.

The presence of eel-grass on the inside of the mooring marked on the map indicates that the bottom is not shifting, and that a channel when dredged will not be readily filled up with a new deposit, particularly if it is located in the line of the present tidal flow. Three estimates are submitted. The first is for a channel 150 feet wide and 6 feet deep, on a straight line connecting the deep water on either side of the bar; the second is for the same width and depth of channel, following the present channel to the old landing and thence across the bar; and the third is the same as the second, except that it provides for 5 instead of 6 feet depth.

ESTIMATE FOR CHANNEL 150 FEET WIDE, 6 FEET DEEP AT MEAN LOW-WATER, ON STRAIGHT LINE.

Removal of 50,000 cubic yards mud and sand, at 22½ cents	$11,250
Removal of Euston's Rocks	300
	11,550

ESTIMATE FOR CHANNEL 150 FEET WIDE, 6 FEET DEEP AT MEAN LOW-WATER, FOLLOWING PRESENT CHANNEL TO OLD LANDING.

Removal of 50,000 cubic yards mud and sand, at 22½ cents	$11,250	
Removal of Euston's Rocks	300	
		11,550

ESTIMATE FOR CHANNEL 150 FEET WIDE, 5 FEET DEEP AT MEAN LOW-WATER, FOLLOWING PRESENT CHANNEL TO OLD LANDING.

Removal of 23,500 cubic yards mud and sand, at 22½ cents	$5,287	50
Removal of Euston's Rocks	300	00
		5,587 50

IMPORTANCE OF THE PROPOSED IMPROVEMENT.

The navigation at present to be benefited by this improvement is confined to the small vessels bringing ashes, ice, and coal for the immediate vicinity, and to the small boats and yachts owned there. In the present condition of the bar at the mouth vessels that arrive outside have to wait for the rising tide to carry them over, which often causes tedious delays. Even at the top of the tide a draught of only 7 feet can be carried over the bar, while above the bar 11½ feet can be taken as far as the "Hope Lands" wharf. Associated with me on the survey were Messrs. W. H. Lawton, jr., and J. A. Curtis, inspectors.

Very respectfully, your obedient servant,

H. A. BENTLEY,
Assistant Engineer.

Bvt. Maj. Gen. G. K. WARREN,
Lieutenant Colonel Corps of Engineers, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. No. 19.

ALTAMAHA AND CANOOCHEE RIVERS, ROMERLY MARSHES AND MOUTH OF JEKYL CREEK, GEORGIA, AND WAPPOO CUT, AND SHIP-CHANNEL ACROSS CHARLESTON NECK, SOUTH CAROLINA.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of surveys of the Altamaha and Canoochee rivers, Romerly Marshes and mouth of Jekyl Creek, Georgia, and Wappoo Cut, and ship-channel across Charleston Neck, South Carolina.

JANUARY 5, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, December 22, 1880.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers dated the 21st instant, and accompanying copies of reports from Lieut. Col. Q. A. Gillmore, Corps of Engineers, upon examinations and surveys made in compliance with the provisions of the river and harbor act of June 14, 1880, at Altamaha River, Georgia; Canoochee River, Georgia; Romney Marsh, near Doboy, Georgia; mouth of Jekyl Creek, Georgia; Wappoo Cut, South Carolina; and for opening ship-channel across Charleston Neck, South Carolina.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., December 21, 1880.

SIR: To comply with provisions of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Lieut. Col. Q. A. Gillmore, Corps of Engineers, of the results of ex-

aminations and surveys for improvements made under his direction at the following localities:

1. Altamaha River, Georgia.
2. Canoochee River, Georgia.
3. Romney Marsh, near Doboy, Georgia.
4. Mouth of Jekyl Creek, Georgia.
5. Improvement for Wappoo Cut, South Carolina.
6. For opening a ship-channel across Charleston Neck, South Carolina.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

EXAMINATION OF ALTAMAHA RIVER, GEORGIA.

UNITED STATES ENGINEER OFFICE,
New York, November 27, 1880.

GENERAL: I have the honor to submit the following report of an examination of the Altamaha River, Georgia, with partial estimates of the cost of works of improvement, as provided for by section 2 of the river and harbor act approved June 14, 1880, and assigned to my charge by letter of June 17, 1880.

The examination was intrusted to Mr. W. G. Williamson, assistant engineer, whose report is herewith inclosed.

The Altamaha River, the most important lying entirely within the State of Georgia, is formed by the confluence of the Oconee and Ocmulgee. It has a southeasterly course and empties into the Atlantic Ocean through Altamaha Sound below the town of Darien. Its length from the point of confluence named to Darien is about 155 miles.

The mean rise and fall of tides in Altamaha Sound is 7 feet. The oscillations of the tidal wave are felt in the river as far up as 30 miles above Darien, but not beyond.

The examination was made during the latter part of October, 1880, when the condition of the river was favorable for observing shoals and other obstructions, the water-surface being then only 1 foot above the common low-water stage.

The velocities of the currents were found to be moderate, and varied from half a mile to 2 miles per hour.

The obstructions to navigation were found to consist chiefly in rock ledges running nearly across the stream, sand bars, which are generally formed where creeks or sloughs connect with the river, and snags. An old wreck in the upper portion of the river, and pile obstructions at two places in the lower reaches, also more or less impede the passage of vessels.

Mr. Williamson specifies thirty-one different localities where works of improvement appear to be needed. Only a limited number of the points indicated require to be improved, however, if a low-water navigation of 3 feet be all that is needed, as it seems to be at the present time.

The cost of improvement is estimated by Mr. Williamson at $61,000, including 10 per cent. for contingencies. The estimate provides for the removal of 10,550 cubic yards of rock, of the old wreck and of the pile

obstructions, as well as of several thousand snags, all in the fresh water compartment of the river, and for dredging 8,000 cubic yards of material near to and above Darien. This estimate covers only those points for which the examination furnished approximate data to base a computation upon; those localities where sand bars occur and which likewise would require improvement are not included, since it will be necessary to have them instrumentally surveyed before a plan of improvement can be devised.

The estimate is therefore incomplete. It must be also remarked that Mr. Williamson appears to assume the width of the channel to be established at 200 feet. Probably a width of 80 to 100 feet would be ample for a number of years, in which case the estimate given would be reduced at least 50 to 60 per cent.

It is thought that the sum of $30,000 might be advantageously expended in improving those portions of the river where the needs and proper methods of improvement are obvious, and in making more careful surveys of several other points concerning which the information gathered by the recent examination is incomplete. It seems likely, as a rough estimate, that the entire cost of the improvement for a channel not less than 80 feet wide, and 3 feet deep at low river, will reach as high as $60,000 for all classes of work.

The statistics collected in regard to the importance of the Altamaha as a commercial route are not as full as desirable. The bulk of the freight carried on it consists of naval stores, timber, and rice. The annual trade in naval stores is estimated at 2,000 barrels of spirits of turpentine and 10,000 barrels of rosin. It is asserted that the forest lands in the vicinity of the Altamaha are the finest in Georgia for the production of turpentine, the amount of which would be quadrupled in one year by a suitable improvement of the river for light-draught boats.

Over 200,000 bushels of rice produced in the tidal districts of the river are annually exported by way of the Altamaha.

Mr. G. W. Faries, general inspector of timber at Darien, states that from 55,000,000 to 70,000,000 feet of square and scab timber reach Darien from the Altamaha annually.

From official statements of the marine and export trade of the port of Darien the following recapitulation is extracted:

EXPORTED.

Period.	Number of vessels.	Aggregate tonnage.	Hewn and sawed timber and lumber.
			Feet.
January 1, 1879, to January 1, 1880	172	81, 378	58, 252, 915
January 1, 1880, to July 1, 1880	165	74, 116	55, 792, 528

All this timber arrives by way of the Altamaha. Mr. Williamson states that a good deal of timber is rafted down that river, which is not included in the above figures as it does not pass through Darien.

Altamaha River is of additional importance when considered as the eastern branch of the proposed Southern transportation route, connect-

ing the Mississippi rivers at Paducah, by way of the Tennessee and Ocmulgee rivers, with the Atlantic Ocean.

This work is located in the collection district of Brunswick. Darien is the nearest port of entry.

In regard to the amount of revenue collected at Brunswick and Darien from import and tonnage duties, no information later than for the year 1878 was obtained, in which year it amounted to $19,766.57.

The report of Assistant Engineer W. G. Williamson is transmitted herewith; to it is appended the statements of Mr. G. W. Faries, general inspector of timber, Darien, Ga., Messrs. Peacock, Hunt, & Co., Savannah, Ga., and Mr. A. S. Barnwell, Darien, Ga., containing information in relation to the trade in timber, rice, and naval stores.

Very respectfully, your obedient servant,

Q. A. GILLMORE,
Lieut. Colonel of Engineers, Bvt. Maj. Gen., U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR W. G. WILLIAMSON, ASSISTANT ENGINEER.

LEXINGTON, VA., *November* 13, 1880.

GENERAL: I have the honor to submit the following report of the survey of the Altamaha River, Georgia:

We commenced the survey on the 20th of October, and finished on the 30th. This survey like that of the Canoochee might more properly be called an examination, as the time and money allotted to it did not permit of an instrumental survey. Just here it will be in place to add that I consider the Altamaha well worth improving, and also that in order to decide upon the best plan for its improvement an instrumental survey ought to be made. The Altamaha is formed by the junction of the Ocmulgee and Oconee, on the dividing line between the counties of Montgomery on the north and Appling on the south; thence flowing southeast it forms the boundary between Tattnall, Liberty, and McIntosh Counties on the northeast, and Appling, Wayne, and Glynn, on the southwest. The length as estimated on our survey, from the junction of the Ocmulgee and Oconee to Darien, the point designated as the terminus of the survey in your instructions, is 155.2 miles. The water was low when our examination was made, being about 1 foot above low-water. The velocity varies from ½ to 2 miles per hour. The fall is so gradual that it was impossible without instruments to determine it. In no case, however, does it amount to enough to retard boats to any great extent. Between the shoals the water varies in depth from 6 to 12 feet or more. In comparison with other rivers now being improved by the general government, and considering its length the shoals are very few. With the exception of three or four of these shoals in the fresh-water compartment there is a depth of 3.0 feet and over on all of them. The most dangerous obstructions are snags, and some rock ledges which run nearly across the stream. The snags and rocks can be easily removed.

The sand-bars will require training walls built in such a manner as to force the current to scour the bed of the stream. These bars present a more difficult problem to the engineer than the rock bars. It is to decide upon a plan for the improvement of these bars that an instrumental survey becomes necessary.

There are sloughs and creeks making from and to the river, about the mouths of which bars form. In many instances these might be shut out by low dams, which would keep the stream within bounds at ordinary water, and at high tide give such a direction to it as would keep the channel clear.

Timber is so abundant that the engineer might adopt any form of timber dam which local circumstances might suggest as most suitable. Mattresses, facine-dams, crib-dams, or pile-dams might be used and would cost very little. In some cases piles driven in quincunx order, with trees and brush firmly fastened between them, would be sufficient to change the direction of a current or prevent its seeking sloughs. The works suggested above are recommended as peculiarly adaptable to the fresh-water compartment of the river. The tidal compartment will require somewhat different treatment, though in some cases the low dams across the mouths of estuaries may be used to advantage. It is impossible for an engineer to consider and advise as to the improvement of such a river unless he is furnished with such data as can be acquired

only by accurate surveys and observations of its physical characteristics. Of course it is equally impossible to design improvements without such data.

I will therefore describe the shoals as briefly as I can, giving those characteristics which I was enabled to note on the rapid examination made, and indicate the improvements which struck me as being applicable. I hope you will bear in mind that a more careful and accurate survey might materially modify my suggestions. The distances which will be given are estimated from the junction of the Ocmulgee and Oconee rivers, where the survey commenced.

1. Sand-bar, 1¼ miles; from 3 to 4 feet water at low-water; assuming 3 feet a sufficient depth for boats destinated to navigate the Altamaha, no improvement will be required here.

2. Town Bluff Shoals, 1.6 miles. This shoal consists of a ledge of rocks running S. 34° E., nearly across the river very oblique to the direction of the current. The channel is very narrow. The depth of water at low-water, 2 feet. The velocity about 2 miles per hour. Water in pools above and below varies from 5 to 8 feet. This bar requires a channel to be excavated about 200 feet wide, and may require one or two wing-dams.

3. An old boat sunk 3.4 miles below Dials' Landing should be removed.

4. Sand-bar, 5.4 miles, water 3.3 feet; no work required.

5. Red Bluff, 8.4 miles; ledge of rocks running diagonally across the river; water from 9.5 to 12 feet and over. It is dangerous and should be blasted out. Dials & Collar's mill is situated here; they saw about 4,000,000 feet, board measure, timber per annum.

6. Pine Bluff, 18.69 miles; large rocks dangerously near the channel; depth of water at low-water from 3.7 to 4 feet. Rocks should be removed.

7. Piney Bluff, 19.5 miles; two rock reefs about 1,200 feet apart; 1.5 feet water on the upper one and 3 feet water on the lower one at low-water. Portions of both should be removed. Mann & Melton's saw-mill is situated here on the right bank.

8. Sand bar, 22.6 miles; over 3 feet water; no work required.

9. Hell's Shoals, 35.8 miles; water from 9 to 12 feet, and over; obstruction consists of dangerous sandstone reefs making out from the right bank, and of isolated rocks so situated as to render it almost impossible to avoid them. Some of these should be blown out.

10. Ohoopee White Bluff, 39.7 miles; sand-bar formed by the river spreading over a large area, and the current being checked at times by the water from an adjacent lake. Water 2 feet deep at low-water. Training dams will be required here.

11. Ohoopee Cut, 43.6 miles; water from 5 to 12 feet deep at low-water. A dam should be thrown across the lower end of the old river so as to cause it to fill up and force all the water through the present channel (the cut). It might also be well to trim off the ragged points and straighten the cut.

12. Shoal at Stafford's Ferry, 48.1 miles; water from 2.9 to 3.9 feet at low-water. Training dams needed.

13. Upper Sister Bluff, 49.4 miles; water from 3.6 feet to 3.9 feet at low-water; no work required now.

14. Lower Sister Bluff, 50.7 miles; bar from 3 to 3.5 feet water at low-water, about ¾ of a mile below the bluff; no work required now.

15. Stooping Gum Cut, 57.6 miles; needs clearing out and straightening.

16. Beard's Creek and Bluff, 62.8 miles; channel filled with snags; water sufficient at present; may in future require training dams.

17. Sand-bar, 67.9 miles; 2.3 to 4.8 water; needs training dam.

18. Sand-bar, 71.2 miles; 3.3 to 5.3 feet water; may require training dams in course of time.

19. Oglethorp Bluff, 72.7 miles; 3.3 to 4.3 feet water; bar needs some excavation; snags should be cleaned out; no work needed at present.

20. Doctortown, 82.9 miles; water from 8 to 12 feet and more; railroad bridge needs draw, being only 36½ feet above the water; two saw-mills there; number of old slabs and binders in the river; mill owners should be required when using rafts to burn binders.

21. Confederate obstructions, 87.8 miles; piles driven in the bed of the river; $1,000 will probably more than cover the expense of removing them; channel way at present clear; water over 12 feet deep.

22. Steamboat Cut, 100 miles; water over 8 feet deep; Old River should be shut out.

23. Confederate obstructions, 105.24 miles; piles driven in the bed of the river partially removed; water from 9 to 12 feet deep; $500 dollars will probably cover the expense of removing them.

24. Fort Barrington, 124.09 miles; water 3 to 4 feet deep; may require training dams; head of tide.

25. First South River, 142.16 miles; water 2.8 feet; needs training dams shutting out First South River.

26. Second South River, 142.99 miles; water, 7 feet; the river should be shut off, and an old wreck near channel removed.

27. Sand-bar, 146.3 miles; water 3.6 to 4 feet at low water; needs examination.

28. Cooper's River, 149.28; bar opposite the mouth of Cooper River; channel navigable for boats drawing 3 feet water, but it needs improvement; judiciously located jetties might answer. It would be well too to shut out partially Cooper's River.

29. Wood's Cut, low end, 152.7 miles; bar; at least 3.3 feet water at low-water; needs dredging to widen channel.

30. Bar, 153.22 miles; water 3 feet or more; channel narrow; needs dredging.

31. Bar, 153.7 miles; water from 3 to 4 feet; needs dredging to widen the channel.

As I have said before more accurate surveys must be made before detailed plans of the work can be decided on. In the fresh-water compartment training dams, preventing the water from running through sloughs or spreading over extended areas, and forcing it into the proper channel, are in my opinion better than jetties, because these dams can be built so as to guide the current over and beyond the bars, and of such shapes as to present a comparatively smooth surface to the current, while jetties act locally, causing a scour immediately at their ends and producing currents, countercurrents and eddies, which in their turn form other bars, sometimes more troublesome than those they were intended to improve.

In the tidal compartment jetties are objectionable because there the currents running up at flood and down at ebb tide cause bars to form between the jetties, and it would be finally necessary to connect the ends of the jetties in order to form a straight or gently curving channel, depending upon the course of the river at the point where they are used. It would be better, therefore, to build the continuous training dam in the first instance. Except in peculiar situations, I consider them objectionable in narrow rivers; their action in narrow rivers is very different from what it is at the entrance of harbors.

The following is a list of the landings and land-marks known to river men. This list of course includes the shoals just described.

Distance in miles.	Names.	Remarks.
0	Ocmulgee and Oconee Junction	
1.25	1st Shoal	
1.63	Town Bluff	Right bank; shoal sandstone ledge.
3.18	Dial's Landing	Right bank.
5.40	Sand Bar	
5.77	Hall's Old Ferry	
6.59	Coleman's and Sessom's Distillery	Left bank; Nayle's Ferry, just below.
7.29	Mauris Old Ferry Landing	Left bank.
8.40	Red Bluff (right bank)	Dial's and Collar's Saw-Mill; 4,000,000 feet, board measure, per annum.
9.46	Milligan's Bluff	Left bank.
10.03	Gray's Landing	Left bank; Henry Mann's Saw-Mill.
16.83	Henry Mann's Landing	Left bank.
18.69	Pine Bluff	Right bank.
19.40	Piney Bluff	Right bank; Melton's Saw-Mill.
21.90	William's Creek	Left bank.
22.63	Shoal	Sand bar.
23.90	Shelton Smith's Landing	Cobb's Creek; left bank.
26.46	Clifton's Landing	Left bank.
26.74	Sharp's Old Landing	Left bank.
26.90	Sharp's New Landing	Left bank.
27.93	Bell's Ferry and Green Lake	Left bank.
28.40	Alligator Creek	Right bank.
30.70	Buck Horn Bluff	Mim's Landing.
31.10	Willow Lake	Right bank.
32.20	Sandy Slough	Left bank.
32.82	Stripling's Landing	Left bank.
35.80	Hell's Shoals	
36.30	Eason's Bluff	Right bank.
37.04	Tilman's Store and Ferry	Right bank.
39.77	Ohoopee White Bluff	Left bank.
42.52	Tilman's Lake	Right bank.
43.65	Ohoopee Cut	Left bank.
43.90	Ohoopee River	Left bank.
47.10	Cypress Nursery	Left bank.
47.50	Carter's Old Ferry	
47.70	Steve Middleton's Landing	Right bank.
48.39	Slough	Left bank.
48.90	Stafford's Ferry, Surrency Lake	Left bank; shoal.
49.43	Upper Sister Bluff and Lake	Middleton's Landing; right bank.
50.70	Lower Sister Bluff	Right bank.
53.10	Watermelon Creek	Right bank.

Distance in miles.	Names.	Remarks.
56. 28	Five-Mile Creek	Left bank.
57. 67	Stooping Gum Cut	Left bank.
60. 50	Reddish's Bluff	Right bank.
62. 80	Beard's Creek and Bluff	Left bank.
67. 04	Oberry Lake	Left bank.
67. 90	Sand Bar	
70. 00	Hughes' Landing	Left bank.
71. 20	Sand Bar	
72. 70	Oglethorpe Bluff	Bar; steamer Adell More wrecked on snag; right bank.
77. 31	Whaley's Saw-Mill, Goose Creek, and Linden Bluff.	Right bank.
80. 00	Bug Bluff and Lake	Right bank.
82. 92	Doctortown	S. W. and F. and Western Railroad crossing; right bank.
85. 49	Old Steam Mill site	Left bank.
87. 80	Confederate Obstructions	
88. 10	Lake Bluff	Left bank.
95. 92	1st Yellow Bluff in narrows	Left bank.
97. 50	2d Yellow Bluff in narrows	Left bank.
97. 74	3d Yellow Bluff	Left bank.
99. 81	4th and 5th Yellow Bluff	Left bank.
100. 11	Steamboat Cut	Left bank.
101. 26	6th Yellow Bluff	Left bank.
101. 97	Old River	Right bank.
103. 03	Bug's Lower Bluff	Left bank.
105. 24	Confederate Obstructions	
105. 58	Bug's Suck	Right bank.
109. 28	Phinholloway Creek	End of narrows; right bank.
114. 09	Doctor Creek	Left bank.
118. 37	Upper Sansavilla Creek	Right bank.
120. 83	Lower Sansavilla Creek	Right bank.
124. 09	Fort Barrington	Ferry and island; about head of tide-water.
126. 44	Brick Yard Cut	Right bank.
131. 81	Clarke's Bluff and Landing	Right bank.
136. 64	Rump's Field	Right bank.
138. 63	Wood Yard	Right bank.
141. 28	Westley Horn	Left bank.
142. 16	1st South River	Right bank.
142. 99	2d South River	Right bank.
146. 30	Bar	
147. 19	Wood's Cut	Left bank.
149. 28	Cooper River	Right bank; Nightengale's Rice Plantation.
151. 90	Darien River	Altamaha to right.
152. 70	Wood's Cut, lower end	Left bank.
153. 22	Bar	
153. 70	Bar	
154. 13	Cat Head Creek	North of Darien.
155. 20	Darien	Opposite Magnolia House.

The inclosed statements, furnished me by gentlemen in Darien and Savannah, Ga., will give some idea of the present trade of the river. It is reasonable to suppose the trade will increase very much if the river is improved, and that other products than those referred to in these statements will seek the river as an outlet to market. I may add that a good deal of lumber is rafted down the Altamaha which is not accounted for in the lumber statements furnished by Mr. R. W. Grubb, as it does not pass through Darien. I understand Mr. Dodge, of St. Simon's Island, shipped 46,000,000 feet, board measure, timber this year. I have no statement of the amount of cotton shipped on the Altamaha, though I know some little is shipped, and believe more would be if navigation was not so dangerous and slow.

I give the statements referred to without further comment, viz:

1st. Annual statement of marine and export trade of the port of Darien, Ga., from January 1, 1879, to January 1, 1880. Timber by R. W. Grubb, publisher of the Darien Gazette.*

2d. Statement of marine and export trade of the port of Darien, Ga., from January 1, 1880, to July 1, 1880. Timber, R. W. Grubb.*

3d. Statement of Mr. George W. Faries, inspector-general of timber for the port of Darien.

4th. Statement of Mr. A. S. Barnwell as to the rice trade.

5th. Statement of Messrs. Peacock, Hunt & Co., Savannah, Ga., as to naval stores.

* Not received.

I will now give a proposed plan of improvement, and an approximate estimate of cost.

The work should be commenced by removing the snags, rock-reefs, and bars which are impassable at low water. While this work is in progress, a survey, which would furnish data for planning the other improvements suggested in the first part of this report, should be made. While a continuous survey of the river would be more satisfactory, it is not in my opinion positively requisite. Surveys embracing each obstruction and extending far enough above and below it to enable one to plan the improvements for it, would be sufficient. I shall therefore only add an approximate estimate of the cost of improvements for which I think I have data sufficiently near the truth.

APPROXIMATE ESTIMATE OF COST OF IMPROVEMENT.

Removing 5,557 snags, at $5	$27,785 00
Removing 550 cubic yards rock excavation, Town Bluff, at $5	2,750 00
Removing 6,000 cubic yards gravel excavation, at 23 cents	1,380 00
Removing old wreck	200 00
Removing 300 cubic yards rock, Red Bluff, at $5	1,500 00
Removing 500 cubic yards rock, Pine Bluff, at $5	2,500 00
Removing 3,000 cubic yards rock, Piney Bluff, at $5	15,000 00
Removing 200 cubic yards rock, Hell's Shoals, at $5	1,000 00
Confederate obstructions	1,000 00
Confederate obstructions	500 00
Bar, 153.2 miles, 4,000 cubic yards, dredging, at 23 cents	920 00
Bar, 153.7 miles, 4,000 cubic yards, dredging, at 23 cents	920 00
	55,455 00
Superintendence and engineering, 10 per cent	5,545 50
	61,000 50

The above estimate would be sufficient for boats drawing 3 feet, except at extreme low water, when some of the sand-bars, for the improvement of which no estimate has been made, might stop a boat of that draft.

The Altamaha is in the collection district of Brunswick, Ga. Darien, Ga., is its port of entry. There is a deputy collector at Darien.

Very respectfully, your obedient servant,

W. G. WILLIAMSON,
Assistant Engineer.

General Q. A. GILLMORE,
Lieutenant-Colonel Corps of Engineers, U. S. A.

Commercial statistics.

STATEMENT OF MR. GEORGE W. FARIES.

DARIEN, *October* 30, 1880.

This is to certify that there come to this port, during the year, from 55,000,000 feet to 70,000,000 feet of square and scab, or mill timber; all this comes from the Altamaha River and its tributaries. This statement is made from the books of my office.

GEO. W. FARIES,
Inspector-General of Timber for the Port of Darien.

STATEMENT OF MR. A. S. BARNWELL.

I hereby certify that, in my opinion, as a rice planter of nine years' experience on the Altamaha River at its tide-water delta, that the export of rice coastwise to markets of Savannah, Charleston, and Jacksonville is as follows:

	Bushels.
Butler's Island	30,000
General's Island	15,000
Champney's Island	14,000
Broughton Island	9,000
Chambers' Island	11,000

	Bushels
Wright's Island	8,000
Car's Island	4,000
Altamaha Plantation	10,000
Eliza Field Plantation	8,000
Evelyn Plantation	12,000
Grantby Plantation	8,000
Broadfield Plantation	16,000
Hofwell	9,000
Grant & Nightengale	13,000
Potosi Plantation	4,000
Ceylon Plantation	4,500
Giguilliat	14,000
Oasis	4,000
Colored people at various places	10,000
	203,000

of rough rice raised on the Altamaha River in McIntosh and Glynn Counties bordering on the river.

This is estimated from the number of acres planted and the general average of the crop on this river as taken from my own crops on the three plantations of Ceylon, General's Island, and Champney's Island.

A. S. BARNWELL.

DARIEN, GA., *October* 30, 1880.

STATEMENT OF MESSRS. PEACOCK, HUNT & CO.

PEACOCK, HUNT & CO., GENERAL COMMISSION MERCHANTS,
Savannah, Ga., November 13, 1880.

DEAR SIR: In compliance with your request we have to report that as nearly as we can ascertain, the quantity of *naval stores* produced on the Altamaha River and transported on that stream this season is as follows:

	Barrels.
Spirits of turpentine	2,000
Rosin	10,000

We may add that the pine forests contiguous to this river are now by far the finest field for turpentine operations in this State, but are useless on account of their remoteness from railway lines and the difficulty and uncertainty of present water transportation. If the river could be easily and safely navigated by light-draft boats, the production would be quadrupled in a single year.

Very truly yours,

PEACOCK, HUNT & CO

Capt. W. G. WILLIAMSON,
Assistant Engineer.

EXAMINATION OF CANOOCHEE RIVER, GEORGIA.

UNITED STATES ENGINEER OFFICE,
New York, November 27, 1880.

GENERAL: I have the honor to submit the following report of an examination of Canoochee River, Georgia, with estimates of cost of improvement, in accordance with the provisions of section 2 of the river and harbor act, approved, June 14, 1880, and assigned to my charge by letter dated June 17, 1880.

The examination was entrusted to Assistant Engineer W. G. Wiliamson, of Lexington, Virginia. The field work was commenced in the latter part of September, 1880, and finished in October following.

Canoochee River is the principal tributary of the Ogeechee which it joins 5 miles above the crossing of the latter by the Savannah, Florida

and Western Railroad, and about 20 miles from Ossabaw Sound. The highest point to which the examination extended was Moore's Bridge, at an estimated distance of 65 miles from the mouth of the river, measured along the water line.

The difficulty of ascending beyond Moore's Bridge in a small boat at the prevailing low stage of the river, and the apparent insignificance of these higher sections for purposes of transportation, prevented the examination from being extended above the point named.

The river is narrow, crooked, and shallow, especially in the upper reaches examined. The velocities of the current ranged from ½ mile to 1¼ miles per hour; the depths from 1 to over 12 feet.

The upper reaches, for an estimated length of 27.8 miles from Moore's Bridge downward, have widths of from 80 to 100 feet; the middle sections for about 15 miles are from 100 to 200 feet wide, and further down to the mouth, the river has widths from 200 to 300 feet.

The obstructions to navigation consist principally of snags, fallen trees, sand and rock bars, and are particularly numerous in the upper reaches of the river. As to the sand bars, Mr. Williamson states that there are so many of them that it is almost impossible to say where one ends and the other begins, and that it would prove an endless job to remove them. The so-called rock bars appear only in the first 15 miles reach below Moore's Bridge, and consist of compact stratified sand, resembling the sandstone from the mountains. The material is soft and easily broken *in situ*, but its removal would require blasting.

The plan of improvement suggested by Mr. Williamson essentially consists in clearing the river of snags and leaning trees, in the partial removal of rock-bars, and some cut-offs for straightening bends. He expects that these improvements will lower the sand-bars by the increased currents washing off the shifting sand and depositing it in the deeper portions of the river bed. By these improvements timber men could float their rafts safely at low-water, and boats of 12 or 18 inches draught could also pass up at that period. During somewhat higher stages of the water steamboats of 3 feet draught could run during 6 or 8 months of the year, if the five bridges spanning the river were re-built by the counties that own them, and furnished with draws. None of the existing bridges are higher than 15 feet above low-water.

The upper section of the river from Moore's Bridge to near Butler's Bridge, a length of about 27 miles, would be the most expensive part of the work; the lower 38 miles, to the junction with the Ogeechee, could be easily made navigable for boats drawing 3 feet, during the whole year.

The estimate given by Mr. Williamson's report contemplates the improvement of the Canoochee to such an extent that the lower 38 miles will be navigable for boats drawing 3 feet and the establishment of a minimum depth at low-water of from 18 to 20 inches in the upper reaches. The total cost he estimates at $46,094.41, including 10 per cent. for contingencies, to wit:

4 rock bars, total length 1,350 feet, 4,588 cubic yards, at $5	$22,940 00
9 cut-offs, total length 3,625 feet, 21,887 cubic yards, at 23 cents	6,534 01
2,181 snags and fallen trees, at $5	10,905 00
1,525 leaning trees, at $1	1,525 00
10 per cent. for contingencies	4,190 40
Total	46,094 41

If the improvement be confined to the lower 38 mile reach, rendering it navigable for boats of 3 feet draught, the expense will be confined to cut-off at five places only, and the removal of a comparatively limited

number of snags and trees. The rock bars occur in the upper sections of the river, and would not be touched. This partial improvement would cost, probably, about $9,405, to wit:

5 cut-offs, total length 625 feet, 15,000 cubic yards, at 23 cents	$3,450
900 snags (estimated), at $5	4,500
600 leaning trees (estimated), at $1	600
10 per cent. for contingencies	855
Total	9,405

The Canoochee flows through a region covered with valuable pine forests, producing timber and naval stores. Considerable business is now done upon the river in rafting timber and lumber, as well as transporting some rosin and turpentine, and the inhabitants believe that the trade would be greatly increased by some material improvement of the river. No statistics were obtainable in regard to the amount of commerce using the Canoochee route, and of the extent of country tributary to it.

This work is situated in the collection district of Savannah. Savannah is the nearest port of entry.

The amount of revenue collected at the nearest port of entry during the last fiscal year was $61,126.25.

The report of Assistant Engineer W. G. Williamson is inclosed herewith.

Very respectfully, your obedient servant,

Q. A. GILLMORE,
Lieut. Colonel of Engineers, Bvt. Maj. Gen., U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. W. G. WILLIAMSON, ASSISTANT ENGINEER.

LEXINGTON, VA., *November* 18, 1880.

GENERAL: I have the honor to submit the following report of the survey of the Canoochee River, Georgia:

The survey was commenced at Moore's Bridge, between Bryan and Tatnall Counties, about 30 miles from Fleming and 65 miles from the mouth of the river, as estimated. This point was considered high enough up the river to commence the examination, as it was difficult to get down from there with a small boat at the low stage of the water. And, so far as I could learn, Moore's Bridge was as high up as any of the citizens cared to have it improved.

The Canoochee rises in Emanuel County, Ga. Its general direction is southeast. Leaving Emanuel County, the river forms the boundary between Bullock County on the north and Tatnall on the south; thence, passing through the north corner of Liberty County, it enters Bryan County and runs through the center of the county to its mouth, where it empties into the Ogeechee River, about 5 miles above the crossing of the Savannah, Florida and Western Railroad of the latter river.

The Canoochee is a very narrow, crooked, and shallow stream, filled with snags, fallen trees, and sand bars. A few of these bars consist of compact stratified sand, resembling in appearance the mountain sandstone used for building purposes. In position it is soft and easily broken, but would require blasting to be removed. I understand it hardens from exposure. The velocity of the river varies from $\frac{1}{2}$ to $1\frac{1}{4}$ miles per hour. Its depth varies from 1 foot to over 12 feet. Limited means and time prevented an instrumental survey of the river. The courses were taken with a pocket-compass and their lengths estimated. The fall, where perceptible, was estimated or obtained by the use of a common spirit-level. The accompanying table shows the landings, creeks, and points generally noted by river-men; their distances from Moore's Bridge and their names. A more detailed description of such points as I think require mention and improvement will be given hereafter. The advantages to be derived from cleaning out and improving the river are chiefly those which will accrue to men engaged in the lumber and turpentine business, by enabling them to get their products to market and get supplies in return. There is considerable business done on the river now in lumber and some in rosin and turpentine. If the river was improved, both of these trades would increase very much. There are large pine for-

ests contiguous to the river which are lying idle because of their distance from transportation.

I regret that I could not get any written statements of the amount of business done on the Canoochee.

There is one turpentine distillery about eight miles from the mouth which does a large business.

Taking into consideration the peculiar character of the river and the amount of its present and prospective commerce, I would recommend that it be cleared of snags and leaning trees, and that the rock bars, which I will describe, be partially removed, so as to get rid of their dangerous features. I would not advise any attempt to remove the sand-bars because they are too numerous, and would form nearly, if not quite as fast, as they could be removed. Clearing the river of other obstructions may distribute the sand more uniformly over its bed, and thus in a measure reduce the objectionable bars, and give a better average depth of water. I would also suggest making some "cut-offs." There are nine places where they could be made, including those already made and used. The three last require improvement; making the improvements suggested would enable timbermen to float their rafts safely at low-water. It would also allow boats drawing from 12 to 18 inches to navigate the river at low-water.

At other times when the river is up steamers drawing from 2 to 3 feet could run on the river provided the bridges which now span it be built anew and furnished with draws. Including Moore's Bridge, there are five bridges between Moore's and the mouth, none of which are over 15 feet above low-water; of course the alteration of these bridges should be made at the expense of the counties which now own them. The length of time steamers drawing 3 feet could navigate the river, after these improvements are made, would depend upon the weather--the season of high-water lasting sometimes from six to eight months. At present I cannot recommend attempting to improve the river for boats drawing 3 feet at low-water. Should the improvements suggested be made, and the commerce on the river develop sufficiently to warrant greater improvements, there will be time enough, and the effects of these improvements may suggest a plan for the permanent improvement, so as to give a navigable depth of 3 feet at low-water. From Moore's Bridge for 7 miles down the river the obstructions are numerous, consisting mostly of snags and sand-bars. The depth of water varies from 1 to 10 feet, and the stream is crooked. Thence to "The Rocks" 14 miles from Moore's Bridge the "reaches" are longer, more direct, and have fewer obstructions; the depth of water varying from 1 to 7 feet.

"The Rocks" consist of compact, stratified sand stone, comparatively soft, but hard enough to require blasting, lying across the stream for 750 feet of its length. The fall here is 6.5 feet. Below "The Rocks" the depth of water is better than above, varying from 3 to 12 feet and over. The stream is somewhat wider than above, varying from 80 to 100 feet between Moore's Bridge and Butler's Bridge, 27.8 miles below the former.

From Butler's Bridge to "Horn Cut," 62.5 miles below Moore's Bridge, the width varies from 100 to 200 feet, and from "Horn Cut" to the mouth 65.17 miles below Moore's Bridge the width varies from 200 to 300 feet. For 38 miles above the mouth the river could be easily made navigable for boats drawing 3 feet water all the year round. There are nine "cut-offs" which might be made, 3 of the nine being already made and used. These "cut-offs" would shorten the distance 13,000 feet, nearly 2½ miles.

The shifting sand-bars are so numerous that it is almost impossible to say where one ends and the other begins. This is more the case on the upper portion of the river. To attempt to enumerate and describe each one would be a waste of time, and would be of no practical value, as they are all alike, and, as I have already said, it would be an endless job removing them. For that reason I have confined myself to estimating for the partial removal of those rock bars which will not reform and to the removal of obstructions and excavating "cut-offs." I feel safe in saying the improvements suggested will meet all the demands of commerce and all the demands of the citizens. It will give 3 feet depth of water for 38 miles from the mouth, and from 18 inches to 20 inches from that point to Moore's Bridge, at low-water.

I therefore submit the following estimates without further comment, viz:

1st. Estimate for removing rock bars.

2d. Estimate for making "cut-offs."

3d. Estimate for removing snags, &c.

I also append a table of distances.

The Canoochee is in the collection district of Savannah.

Very respectfully, your obedient servant,

W. G. WILLIAMSON,
Assistant Engineer.

Genl. Q. A. GILLMORE,
Corps of Engineers, U. S. A.

Estimate of cost for removing portions of certain rock bars in the Canoochee River, Georgia

Number of bar.	Distances from Moore's Bridge in miles.	Length of bar in feet.	Average depth on bar at low-water.	Number of cubic yards excavation required.	Amount.	Remarks.
1	8.1	300	1.5	833	$4,165 00	Rock.
2	10.1	100	1.2	200	1,000 00	Do.
3	11.7	200	1.5	555	2,775 00	Do.
4	14.2	750	1.0	3,000	15,000 00	Do.
	Total	.....	.....	4,588	22,940 00	

Estimate of cost for the cut-offs proposed on the Canooche River, Georgia.

Number of cut-offs.	Distances from Moore's Bridge in miles.	Distance saved.	Length cut.	Number of cubic yards.	Amount.	Remarks.
1	0.7	2,600	300	2,777	$638 71	
2	2.21	2,500	800	7,407	1,703 61	
3	15.2	1,500	100	926	212 98	
4	21.4	.....	800	.....	500 00	Loyds used; needs clearing.
5	32.5	.....	750	.....	500 00	Jacks used; needs clearing.
6	37.0	1,600	30	2,000	460 00	
7	49.0	800	25	6,000	1,380 00	
8	53.5	2,000	20	2,777	638 71	
9	62.5	2,000	800	.....	500 00	Horn used; needs clearing.

ESTIMATE OF COST OF REMOVING THE SNAGS, FALLEN TREES, AND LEANING TREES ON THE CANOOCHE RIVER, GEORGIA.

1,948 snags	$9,740 00
233 fallen trees	1,165 00
1,525 leaning trees	1,525 00
	12,430 00

SUMMARY SHOWING TOTAL COST OF PROPOSED IMPROVEMENT OF THE CANOOCHE RIVER, GEORGIA.

Clearing away snags, &c	$12,430 00
Excavation at "cut-offs"	6,534 01
Excavation at rock bars	22,940 00
	41,904 01
Engineering and superintendence	4,190 40
Total	46,094 41

Distances in miles.	Names of landings, creeks, bridges, and most noted shoals.	Remarks.
0.00	Moore's Bridge	
1.52	Bull Creek	Right bank.
2.36	Stave Landing	Do.
4.20	Burnt Landing	Left bank.
5.94	Wilder Cut	Do.
6.36	White Bluff	Do.
6.76	Bacon's Landing	Do.
7.65	Archer's Landing	Right bank; shoal-fall 1 foot in 1,000 feet.
10.11	Moody's Bridge	
11.70	Sand Rock Bar	Fall 1 foot in 300 feet.
12.16	Johnson's Landing	Left bank.
13.29	Edwards's Landing	Left bank; obstructed by fallen trees.
13.99	Edwards's House and Landing	Left bank.
14.22	"The Rocks" Head	Fall 6.5 feet in 750 feet; 1.6 feet depth of water at low water.
14.36	"The Rocks"	
15.35	Opossum Bluff Landing	Left bank.
16.50	Elder's Old Ferry	
17.08	Warnell's Landing	Left bank.
17.28	Warnell's Bridge	133.5 feet long 14.5 feet above water; river 70 feet wide.
18.16	Clifton Bluff	Left bank.
20.94	Lloyd's Landing	Right bank.
21.47	Lloyd's Cut-off	
22.72	Yellow Bluff No. 1	Left bank.
26.08	Warnell's Bluff	Do.
27.42	Louder's Store	Do.
27.82	Butler's Bridge	145 feet long; 10.66 feet above water; river 120 feet wide.
28.88	Yellow Bluff No. 2	Left bank.
29.58	Lanier's Ferry	
30.72	Little Canoochee	Right bank.
32.53	"Jack's Cut-off"	Left bank.
35.94	Little Brushy Bluff	Right bank.
37.00	Cut-off	Left bank only 30 feet.
38.22	Big Brushy Bluff	Right bank.
39.62	Jones Creek and Bluff	Left bank.
40.68	Henry Long's Landing	Do.
43.58	Savage's Creek	Do.
43.75	Savage's Bluff	Do.
45.64	Mathews's Bluff	Right bank.
46.91	Wells's Ferry	
46.91	Davis Landing	Right bank.
47.53	Brewton Lake	Do.
48.18	Hernes Cove	Left bank.
49.07	Cut-off	Right bank.
50.15	Fred's Island	Do.
50.19	"The Narrows"	
50.26	Bachelor Lake	Right bank.
50.62	Old Steam Mill and Bluff	Do.
52.18	Nevel's Landing	Do.
52.33	Head of tide waters	
52.67	Cribb's Lake	Left bank.
53.52	Cut-off	Do.
55.04	Bragg's Bridge	150 feet long; 8.75 feet above water; river 137 feet wide.
55.24	Ellis Landing	Left bank.
55.81	Bragg's Landing	Right bank.
56.04	Hines Landing	Do.
57.67	Ellis's Turpentine Distillery	Left bank.
58.82	Piney Island	Right bank.
60.55	Brown's Lake	Left bank.
61.34	Nancy James Bluff	Do.
62.57	Horn Cut	Do.
65.17	Mouth of river	Empties into the Ogeeche.

EXAMINATION OF ROMNEY MARSH [ROMERLY MARSHES], GEORGIA.

UNITED STATES ENGINEER OFFICE,
New York, November 15, 1880.

GENERAL: I have the honor to submit the following report of an examination of Romney (?) Marsh, with estimates of the cost of improvement, provided for by section 2, of the act approved June 14, 1880.

This duty was assigned to me by letter dated June 17, 1880.

Such examination as was deemed to be sufficient for the object in view

was made by Mr. S. L. Fremont, the civil assistant on the Savannah River Improvement, whose report is submitted herewith.

The water route leading through Romney Marsh, or more properly Romerly Marshes, as designated on official charts, forms part of the inland passage between the Savannah River, Ga., and the Saint John's River, Fla. These marshes are situated to the southeast of Skiddaway Island, between Wassaw and Ossabaw Sounds, Georgia. They are traversed and drained by numerous tidal creeks, the most important of which, Romerly Marsh Creek, discharges into Wassaw Sound.

The surface of the marsh is uniformly level, and about 5 feet above mean low-water, so that at ordinary high tide it is entirely covered, the mean rise and fall being about 7 feet.

Vessels using the Island Passage, after leaving the Savannah River and passing down the Wilmington River, enter Romerly Marsh Creek and follow it about 3 miles; they then pass through the Romerly Marshes, following a generally southerly but very tortuous course until they emerge into Odingsell River, by which they enter Ossabaw Sound.

The objections to the existing route through Romerly Marshes are chiefly its excessive crookedness, sharp bends, and insufficient low-water depths. Vessels drawing 5 feet of water cannot pass through on less than half-tide.

The examination, therefore, had for its leading object the selection of a more suitable channel route for connecting the waters of Romerly Marsh Creek and Wassaw Sound.

Four routes suggested themselves as feasible, and they were accordingly examined. Every one of them requires more or less cutting through the marsh. The several lines are marked on the accompanying map, and will be briefly described.

ROUTE NO. 1.

This route would connect the deep waters of Romerly Marsh Creek with Odingsell River by way of "Habersham's Cut," and a required cut about 1,000 yards long through the solid marsh. This is undoubtedly the most direct route of those examined. Habersham's Cut runs about due north; it is remarkably straight, with sufficient depth and width of water for a length of over a mile. From its southern head the new cut to Odingsell River would start, and two lines are suggested for this purpose, marked on the map A-B and A-B′, respectively. Line A B or A *ab* B″, though rather longer than the other, would be probably somewhat cheaper by utilizing part of the eastern head branch of Habersham's Cut. About $1\frac{1}{4}$ miles distance will be saved by this route over the existing one.

ROUTE NO. 2.

By cutting through the marsh along the line C-D, two navigable creeks will be connected, the northerly creek emptying into Wassaw Sound at the mouth of Romerly Marsh Creek, and the Southerly Creek into Odingsell River. The cost of cutting is less than for any of the other routes; but the passage through the creek is very crooked, and 3 miles longer than by the present channel.

ROUTE NO. 3.

By this line the northerly creek, mentioned above in Route No. 2, would be connected with Wassaw Creek by the line of cutting C-F.

Wassaw Creek flows into Odingsell River not far from the point where the latter discharges into Ossabaw Sound. It has ample accommodations for vessels using the Inside Passage. The cost of establishing this route would be about the same as by way of line A-B, Route No. 1, but the passage is very tortuous, and 3 miles longer than the channel now used.

ROUTE NO. 4.

By this route the same creeks are connected as by No. 3, but the line of canal is changed to F-G. The expense of cutting would be larger than for any of the other lines, and it is about $2\frac{5}{8}$ miles longer than the one now used.

By Routes No. 3 and No. 4, vessels bound south on emerging from the mouth of Odingsell River, could, when the sea is calm, and the tide near the slack-water of flood, pass across a portion of Ossabaw Sound, thus shortening the distances above given about $\frac{3}{4}$ of a mile.

This, however, would involve waiting for the tides, which constitutes one of the principal disadvantages of the present channel. In rough weather this shorter line could not be used.

In making estimates Mr. Fremont assumes that the average depth of cutting below the surface of the marsh would be 12 feet, with a bottom width of 48 feet, and side slopes of 1 to 3, giving a low-water surface width of 90 feet. Since the surface of the marsh is about 5 feet above the low-tide level, the low-water depth in the channel would be about 7 feet. This would be ample for the class of vessels seeking this passage.

The estimated cost of the improvement on the several routes named is given below, in which the excavations are placed at 20 cents per cubic yard, and 10 per cent. is allowed for inspections and other contingent expenses.

	Cost.
Route No. 1.—Cut AB or A*ab*B″; low-water channel 7 by 48 feet	$30,272
Route No. 1.—Cut AB′; low-water channel 7 by 48 feet	35,200
Route No. 2.—Cut CD; low-water channel 7 by 48 feet	26,400
Route No. 3.—Cut CF; low-water channel 7 by 48 feet	31,680
Route No. 4.—Cut FG; low-water channel 7 by 48 feet	38,720

Another route mentioned in Mr. Fremont's report, by way of White Marsh Island and the Isle of Hope, about 3 miles west of Romerly Marshes, was examined under later instructions. By this line Skiddaway River (discharging into Wilmington River) and Burnside River (discharging into Vernon River) would be connected; the improvement consisting in deepening and straightening the very tortuous and shallow passage known as Skiddaway Narrows. The cost of this improvement would be about the same as for Route No. 1, but it is not seen that any advantage would be gained by adopting it. It appears also that this route is claimed by some parties as private property, and they are said to have obtained a charter from the State of Georgia for a toll canal.

It is not feared that the new channel will fill up again by the washing in of the excavated material placed on the banks, if the work is done with proper precautions. If a short and nearly straight route, such as that by way of Habersham's Cut, be selected for improvement, but little shoaling need be apprehended as a result of the tides dividing about half way between Romerly Marsh Creek and Odingsell River; though it is possible that some dredging may be required occasionally; with this restriction the improvement will be a permanent one.

The Inside Passage between Savannah and Jacksonville, which may

CHART OF ROMERLY MARSHES

between Wassaw and Ossabaw Sounds, Ga.

Examined under the direction of
Bvt. Maj. Gen. Q.A. Gillmore.
Lieut. Col., Corps of Engineers U.S.A.
by Mr. S.L. Fremont. Ass't Eng'r.
August and September 1880.

U.S. Engineer Office.
New York, November 15, 1880.
Forwarded to the Chief of Engineers, with my report of this date.
Q. A. Gillmore
Lieut Col. of Engineers
Bvt. Maj. Gen. U.S.A.

Note
The soundings are expressed in feet, and show the depths at mean low water; the plane of reference.
The topography was taken from the U.S. Coast Survey Chart published in 1867.

House Ex. Doc. No. 19.
3d Sess. 46th Cong.

be said to continue far into the interior of Florida by means of the Saint John's River, is recognized as a valuable water route for the transit of passengers. Properly improved it would furnish cheap and convenient transportation for the merchandise required, and the products of field and forest produce by a population covering an area of at least 10,000 square miles, by affording a sheltered passage to light-draught vessels that could not venture upon the outside passage. The distance between Savannah and the Saint John's River is over 200 miles, and the route traverses numerous sounds and navigable creeks and rivers, penetrating far into the interior of the coast district. Its value is emphasized when the possibility of the United States becoming involved in war with a maritime power is taken into consideration.

For further particulars attention is invited to Mr. Fremont's report.

A local advantage is claimed for Routes No. 3 or No. 4 by way of Wassaw Creek as affording facilities for landing people seeking the sea shore of Wassaw Island for health or recreation, and offers have been made to furnish aid from private sources in case a channel leading into Wassaw Creek is selected for improvement. It is presumed that the precise line to be improved need not be determined at the present time.

The estimated cost of the improvement through the Romerly Marshes, so as to give a low-water channel 48 feet wide and 7 feet deep, with side slopes of 1 upon 3, is $31,000.

The papers submitted are Mr. Fremonts report, and a chart of the Romerly Marshes.

Very respectfully, your obedient servant,

Q. A. GILLMORE,
Lieut. Col. Engineers, Brevet Major-General, U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. S. L. FREMONT, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Savannah, Ga., September 13, 1880.

GENERAL: I have the honor to submit the following report of an examination of Romerly Marsh, north of Wassaw Island, made in compliance with your orders of August 2, 1880.

The four routes to which you refer were examined in the order mentioned in your letter, and numbered 1, 2, 3, and 4.

ROUTE NO. 1.

This route from A to B, as shown on the chart received, is a continuation of the channel known here as "Habersham's Cut." This channel was examined from its mouth in Romerly Marsh Creek to the point marked on the accompanying sketch A, where the channel forks; the eastern branch was followed to the head of navigation by the launch at half tide to *b*. The soundings from Romerly Marsh Creek to the forks—a distance of 1,980 yards—showed a mean low-water depth of nowhere less than 8 feet. From the forks to the point marked *b*, the lowest depth found, except at one small shoal, was 5 feet. The width of the main channel from its mouth to where it forks is from 120 to 275 feet. The eastern branch channel has a width of from 30 to 50 feet, and is very tortuous, while the main channel is quite straight.

The gradienter was used in determining some of the distances, as we found the marsh too soft to be passed over with a chain; only approximate distances across the marsh are therefore given. Whenever we were able to verify the distances on the Coast Survey chart that was sent me, they were found to be very accurate, and I believe entirely reliable for the purposes of this examination, and an approximate estimate of the cost of the work of improvement proposed. From A to B the distance is

1,085 yards. The distance across the marsh from A to B is 1,000 yards. The distance from *a* to *b* is 500 yards; and that from A to *b*, by the meanderings of the creek, is 650 yards; this can be reduced, by cutting away bends and angles, to 600 yards. This will give us two routes by which to reach the point B on the Odingsell River. The greater distance from A to B than from A to B′, induced a change of the former, slightly.

From A to B″, 1,000 yards, will require a cut 4 yards (12 feet) deep, and of a width of 40 yards, to give proper facilities for the passage of steamers 52 feet wide that are liable to meet each other in these channels. Assuming these dimensions to be proper for this passage, I submit the following estimate for the work:

1st. A canal, 1,000 yards in length, 40 yards in width, and 4 yards in depth, will require an excavation of 160,000 cubic yards of rice field or marsh clay, most of it very soft at first, but hardening rapidly after a regular drainage is effected. I believe the work can be done with a steam shovel, or dipper dredge, for 20 cents per cubic yard. This will make the cost $32,000.

2d. For the distance of 600 yards, along the eastern branch, I estimate two-fifths of the work as done, by utilizing that branch; which leaves three-fifths of the excavation to be made, or 57,600 cubic yards. We then have to cut through the marsh for a distance of 500 yards, across the Odingsell River, removing 80,000 cubic yards of material.

The aggregate amount of excavation to be made on this line will be 137,600 cubic yards, which, estimated at 20 cents, will give a cost of $27,500. Add to these figures 10 per cent. for contingencies, and the aggregate cost of the two lines, respectively, will be as follows:

Direct line from A to B′	$35,200
East branch line from *a* to *b* to B′	30,272

I recommend the cheapest line, as I think it will be equally efficient and convenient for trade and travel, and is obtained at a smaller cost.

I do not consider there will be any necessity for constructing high-tide reservoirs at the "divides," or where the tides meet on this canal, at present, as the winds drive the tides through with force in the direction they are moving, and will, I believe, keep the canal open. Should future experience show their necessity, for sweeping out the deposits where the tides neutralize each other, they can be excavated by connecting some of the numerous side creeks at a small cost.

I believe this improvement will be permanent, and will save about 2 miles in the distance to be passed over in going through "Romerly Marsh" by the present very tortuous route, where the inland steamers drawing but 5 feet of water cannot pass with less than half of a full tide, and, as a consequence, great detention of trade and travel is frequently caused.

If the project herein presented for a channel from Romerly Marsh Creek to the Odingsell River is adopted, a low-water depth of about 7 feet will be obtained for the whole distance. Should it be deemed best to make the cut recommended only 60 feet wide at first, with a view of reducing first cost, and of widening it afterwards, $21,120 may be taken as a suitable estimate for the work to that extent, viz, by cutting a channel 24 yards wide (to allow for sloughing off) through the marsh 500 yards, and deepening and widening—to a width 20 yards—the east branch; making an excavation equal to 96,000 cubic yards.

ROUTE NO. 2.

The line from C to D was examined and the channels of approach to these points, respectively, were found to be good, with an ample depth of water for all vessels that would navigate them, as will be seen by a reference to the accompanying sketch. The distance between these points across the marsh is 750 yards, and it is the shortest distance that was found at any point between the streams running north and those running south, or from the line of the meeting tides called the "divides."

The depth of the excavation here I take to be the same as that on the first line—4 yards— and we find a canal 40 yards wide will require an excavation of 120,000 cubic yards of material, at a cost of 20 cents a yard. This will aggregate $26,400, including a contingent allowance of 10 per cent.

While this route can be opened through for navigation for the smallest outlay, the distance through by it is 5 miles greater than it is by the first route examined, and 3¼ miles longer than by the old route through the marsh.

ROUTE NO. 3.

We next examined the route from C to F, which connects with Wassaw Creek. The distance here to be cut through is 900 yards, the amount of excavation 144,000 cubic yards, and cost, including a contingent allowance of 10 per cent., $31,680. The approaches to this cut are as good as at any of the others, but the distance to be cut

through is longer than at the one just preceding it, and the whole distance to be passed over from common points on either side "Joe's Cut" and Odingsell River is also longer than by either of the four routes.

ROUTE NO. 4.

This route was next examined, and the distance to be cut is longer than any of the three previously examined. From F to G the distance is 1,100 yards, the cross-section being the same as at the other cuts. We have here to excavate 176,000 cubic yards of material, at a cost, including contingencies of 10 per cent., of $38,720. The whole distance by this route between the common points taken is 1¼ miles less than by the preceding route.

GENERAL REMARKS.

The elevation of the marsh, its solidity, and the average rise of the tides over it on all the lines examined seem to be precisely similar; mean high-water seems to cover the entire marsh.

A question of importance here presents itself. Will the banks be able to sustain the superincumbent weight of the excavated material without sliding into the canal? I believe they will, if the work is properly conducted, which should be by making one cut with a dredge all the way through, by which a line of drainage will be effected, and as a consequence the ground will be hardened. Such is the experience with this kind of marsh. This should be done on either of the canal, leaving a core of 60 feet in the middle to be taken out by a second cut on each side. I assume a rectangular cross-section the area of which is 160 square yards to be the proper one.

It is both difficult and unnecessary to make other than a vertical cut with a dredge in the canaling, because the tendency of the marsh land is to be thrust out at the bottom by the superincumbent weight placed on it, and will readily assume a natural slope.

The method I have suggested of doing the work will be found both advantageous and economical. The "core" as well as the banks will be drained and hardened, the banks be more capable of sustaining the weight, and the core more easily removed by a second cut on each side. By the time the first cut on each side is completed, the shore along the sides of the first cut will have become sufficiently hardened to bear the material from the next cut, which should be carried to the embankments already formed, and contribute to raise them above the highest tides. The banks, I think, will assume a slope of about 1 on 3 and so remain, as that seems to be the natural slope at present observed along the creeks. This will give a bottom width of 48 feet and low-water width of 90 feet, low-water being taken at a depth of 7 feet, or 5 feet below the surface of the marsh.

Should an appropriation be made for opening a passage through this marsh, a more complete survey with proper appliances for the work will be necessary, or at least desirable, though I consider the distance and quantities given in this report are a very close approximation to absolute accuracy.

WHY THIS IMPROVEMENT IS NECESSARY.

This improvement is required to supply proper facilities for doing a large coast-line business—which is demanded by the productive country along the line—in cotton, rice, and naval stores, as well as in the return transportation of general merchandise, to which add its importance as a passenger thoroughfare, and to overcome the difficulties attending the navigation by its present route, which is obstructed by shoal water and a very tortuous channel.

THE EXTENT OF COUNTRY THAT WILL BE BENEFITED BY THE IMPROVEMENT.

The entire coast line inland, for an average distance of 50 miles in width (if we reckon the area of country bordering the lateral rivers that are tributary to this line of transportation), from Savannah to the Saint John's River, and as far up that river as Palatka.

The winter travel embraces a large number of people from most of the States of the Union, and in summer only those living in the vicinity of the line.

Five large steamers of light draught are now employed about eight months in the year, and two are employed the entire year, in the trade and travel along the line.

It is believed that a considerable increase in commerce will be attracted to the line by the improvements herein recommended.

The amount of population that will be benefited by them may be estimated at 200,000. The collection district is Savannah, Ga. The nearest port of entry is Savannah, Ga. The nearest light-house is Tybee. The nearest forts are Jackson and Pulaski. The

amount of revenue collected at the nearest port of entry during the last fiscal year was $61,126.25.

The general benefits to the country to be derived from this improvement will be in supplying an inland water communication between the Savannah and Saint John's rivers, a distance of more than 200 miles, entirely sheltered from the attacks of an enemy in case of war with a foreign power.

In this connection I invite your attention to a route not embraced in your orders, and probably not contemplated by any act of Congress.

Please refer to the chart returned with this report, by way of White Marsh Island and Isle of Hope, to a place marked "Skiddaway Narrows," where it is said that a channel may be opened at a comparatively small cost, and by that route several miles of distance may be saved in reaching points on the coast, and at the same time accommodate a large trade beyond the Isle of Hope.

TABLE OF RELATIVE DISTANCES BY EACH OF THE ROUTES EXAMINED, WITH THE COST OF EACH.

From "Joe's Cut" to Odingsell River, at 0:

	Miles.
By old route via Romerly Marsh	5¼
By new route, No. 1, Habersham's Cut	3¼
By new route, No. 2, C D	8¼
By new route, No. 3, C F	10¼
By new route, No. 4, F G	9

Cost by each route:

No. 1, direct and shortest line	$35,200
No. 1′, by eastern branch of creek	30,272
No. 2, C D (on chart)	26,400
No. 3, C F (on chart)	31,680
No. 4, F G (on chart)	38,720

I am, very respectfully, your obedient servant,

S. L. FREMONT,
Assistant Engineer.

Maj. Gen. Q. A. GILLMORE,
Lieutenant-Colonel of Engineers, U. S. A.

EXAMINATION OF THE MOUTH OF JEKYL CREEK, GEORGIA.

UNITED STATES ENGINEER OFFICE,
New York, November 20, 1880.

GENERAL: I have the honor to submit herewith the following report of an examination of the mouth of Jekyl Creek, Georgia, with estimates of the cost of improvement provided for by Section II of the river and harbor act, approved June 14, 1880.

This work was assigned to me under date June 17, 1880, and was carried out under my instructions by Mr. S. L. Fremont, civil assistant on the Savannah River improvement.

Jekyl Creek forms part of the inside passage between Savannah River, Georgia, and the Saint John's River, Florida. It connects Saint Simon's Sound and Brunswick River at the north with Saint Andrew's Sound at the south.

The mean rise and fall of the tide is 6.8 feet.

Jekyl Island is situated to the eastward of the creek, and separates it from the ocean.

The total length of the creek is about 5 miles. In its southern reaches, and in fact for the greater portion of its length, it has ample width and depth for the largest class of vessels that take the inside route. Towards its northern end, about a mile from its entrance into

Brunswick River, a troublesome shoal exists between the point where Lathram and Mud Rivers enter the creek.

From the mouth of Jekyl Creek to the deep waters of Brunswick River, in the bight formed by the southern shore of the latter, there are extensive mud flats across which vessels must pass on entering or leaving the creek.

These two shoals form the principal obstruction to the navigation of Jekyl Creek.

The shoal between the confluences of the creek with Mud and Lathram rivers undoubtedly owes its formation and maintenance mainly to the fact that here the tides divide, except when strong and continued winds disturb the normal conditions. Another cause probably is the loss or escape of a portion of the ebb flow of Jekyl Creek through Mud River into Brunswick River. By increasing the flow of water at the "divides" it may be expected that the shoal will be reduced and that the outflow current at the mouth of Jekyl Creek will be strengthened.

In its present condition the currents in the northern portion of the creek are enfeebled by diversion into Mud River. In passing out at the mouth, its own waters meet the large volumes and strong ebb currents of Brunswick River, resulting in a bar and shallow navigation at that point. Even if a channel were made by dredging across this bar it would probably soon fill up again and require repeated dredging, as already pointed out in my report on the inside passage between Cumberland Sound and Saint Simon's Sound, Georgia, submitted April 24, 1876.

While dredging would afford temporary relief, a more feasible method for improving this entrance is indicated in Mr. Fremont's report. It consists in continuing the western bank of Jekyl Creek by means of a training wall carried across the mud flats or bar, until the 7 or 8 feet low-water curve in Brunswick River is reached. The outer and longer portion of this training wall, which is approximately represented on the chart by the heavy line A B, would have a northerly direction. The ebb currents of Jekyl Creek will thus be prevented from spreading out, and will join the ebb currents of Brunswick River at a favorable angle. The training wall will also impose better conditions than now exist on the movement of the flood tides.

This jetty or training wall would be built of brush and stone, or of logs, brush, and stone, in the simplest manner, with a width of 14 to 18 feet; while its length, as indicated by the line A K B on the inclosed chart, would be about 2,700 feet.

It is thought that the training wall here described will be sufficient for the object in view. If found to be otherwise, a second wall on the other side of the channel will have to be added, although its cost is not included in the accompanying estimate.

To improve the passage over the shoal in Jekyl Creek, between Mud and Lathram rivers, Mr. Fremont suggests two methods. One method consists in building a training wall, C D, to narrow the channel and produce stronger currents. The other, which he prefers, contemplates the partial closure of the outlets of Mud and Lathram rivers, by submerged dams, E F and G H.

It appears that Lathram River is practically a tidal reservoir that feeds Jekyl Creek during ebb tide. It is quite probable, from its location and direction of outflow, that this extra supply of water is less beneficial to the northern than to the southern reaches of the creek, where abundant depth of water prevails, although some portions of it flow out in a northerly direction.

It is different with Mud River, which has a northerly and comparatively straight course. It also connects with Brunswick River by a branch of its own, and it has been observed that portions of the ebb flow of Jekyl Creek escape through that branch and flow into Brunswick River at the point *a* on the chart.

To prevent this loss and convert Mud River, in some degree at least, into a tidal feed basin for Jekyl Creek, a dam across the mouth of the river at the line L M appears to be desirable. If this dam produced the desired effect, the two dams recommended by Mr. Fremont at E F and G H, respectively, could be dispensed with.

The length of the dam at L M would be about 200 feet.

It is recommended to promote the action of the works described by some dredging, both over the shoal and on the bar at the mouth of Jekyl Creek. In making the estimate it is assumed that a depth of not less than 6 feet at mean low-water should be established by dredging, with a bottom width of 50 feet, and side slopes of 1 upon 3.

The length of the cut through the shoal would be a little over 3,000 feet, requiring the removal of about 18,000 cubic yards of material.

The length of the cut through the bar from the mouth of Jekyl Creek to Brunswick River would be about 1,800 feet, and 8,000 cubic yards would have to be removed.

The importance of the inside passage of which Jekyl Creek forms a part, was briefly stated in my report on the improvement of the channel through Romerly Marshes, submitted under date November 15, 1880, to which attention is respectfully invited.

The estimated cost of the improvement of Jekyl Creek, after the method herein recommended, is $25,323, as shown below.

ESTIMATES.

1. Training wall, mouth of Jekyl Creek, 2,700 feet, at $5.80	$15,660
2. Closure dam, mouth of Mud River, 200 feet, at $5.80	1,160
3. Dredging shoal in Jekyl Creek, 18,000 cubic yards, at 20 cents	3,600
4. Dredging mouth of Jekyl Creek, 8,000 feet, at 20 cents	1,600
Add 15 per cent. for contingencies	3,303
Total	25,323

The report of Mr Fremont and chart of Jekyl Creek, with location of work of improvement indicated thereon, are herewith transmitted.

Very respectfully, your obedient servant,

Q. A. GILLMORE,
Lieut. Col. of Engineers, Bvt. Maj. Gen. U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. S. L. FREMONT, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Savannah, Ga., September 30, 1880.

GENERAL: I have the honor to submit the following report of an examination and survey of Jekyl Creek, made in compliance with the instructions contained in your letter of August 2, 1880:

Jekyl Creek is the best and most direct water-course connecting Saint Andrew's Sound with the estuary known as "Brunswick River." A portion of this creek is known as "Jekyl Sound," and makes its connection with Saint Andrew's Sound. Brunswick River connects with Saint Simon's Sound on the east, and is divided at "Brandy Point," the southern extremity of "Buzzard's Island," into two branches known respectively as "Turtle River" and "East River," the latter being the channel of approach to the city of Brunswick.

The northern outlet of Jekyl Creek is about 6 miles from the city of Brunswick,

CHART OF JEKYL CREEK

between St. Simon's and St. Andrew's Sound's, Ga.

Examined under the direction of
Bvt. Maj. Gen. Q. A. Gillmore.
Lieut. Col. Corps of Engineers U.S.A.
by Civil Assistant S. L. Fremont
assisted by R. S. Burnett, Asst. Eng'r.
in September 1880.

U. S. Engineer Office
New York, November 20 1880.
Forwarded to the Chief of Engineers with my report of this date.
Q. A. Gillmore
Lieut. Col. of Engineers.
Bvt. Maj. Gen. U.S.A.

LOW WATER .....
4 FOOT CURVE .....
8 FOOT CURVE .....

300 200 100 0 300 600 900 1200 1500 1800 2100 2400 2700 FEET

House Ex. Doc. No. 19.
3d. Sess. 46th Cong.

Note:
At the time of these observations the prevailing wind was from the N.E. the low water plane was about one foot higher than the average low water.
The soundings were reduced to the low water plane at the time of survey.
The depths are given in feet. To reduce them to depths at mean low water- the plane of reference used on U.S. coast survey charts, about one foot should be deducted from each sounding here given.
Mean Rise and Fall of Tides ..... 6.8 feet.

and the total length of the creek from Brunswick River to Saint Andrew's Sound is 5 miles, measured in both cases by the channels of navigation.

The depth of mean low-water, except at places where improvements are required and embraced in this report, was found to be 8 feet. The lowest depth of water across the mud flat in front of the mouth of the creek was found to be 3.2 feet. The distance from the mouth of the creek at the marsh (A) to a 7-foot depth (B) in Brunswick River is about 2,500 feet.

It is along this line across the mud flats that the principal difficulty in navigating Jekyl Creek is encountered, and then only at very low stages of the tides.

To remedy this difficulty and make a good and permanent channel, it is necessary to ascertain the cause or causes of the shoaling.

This survey was made during a continuously prevailing wind from the northeast, and it was observed that the ebb and flood currents alike flowed in the direction of Saint Andrew's Sound, and continued to do so, on the ebb-tide, until about the last quarter, when it ceased and the tides divided at the shoal in the creek (to be described further on in this report), and the northern portion ran back into Brunswick River.

In the absence of controlling winds the tides meet at the shoals between the two rivers that flow west, called respectively "Mud" and "Lathram" rivers. It will be observed that Mud River connects with Brunswick River flats at *a*.

In consequence of the uncertain and feeble ebb-flow of the creek into Brunswick River and across the flats to the channel, the strong ebb-tide of that river drifts the sediment into the channel or discharge basin of the creek, which it is not able to keep open to a sufficient depth for navigation at mean low-water.

PROJECT OF IMPROVEMENT.

I recommend the construction of a training-wall along the northwest side near the margin of the "outlet basin" across the flat to deep water, commencing at the point A on the shore of the marsh-flat, and running to the point B, near the buoy, a distance of about 2,500 feet (see chart submitted with this report). This training-wall may be constructed of a grillage of cheap pine logs, 16 feet in length, running parallel with the current of Brunswick River, upon which place a mattress of brush in bundles 12 feet in length and 3½ feet in thickness, when compressed, lashed firmly together, and piled upon the grillage flooring, across which binders of palmetto logs may be placed and held in position by long drift-bolts of ⅝-inch square iron.

Upon this mattress of brush place a covering of 6 inches of riprap stones. This will give a suitable training-wall, compact, cheap, and efficient. It will be about 4 feet in height when the grillage has settled, as it will, into the soft bottom about 1 foot. The sediment will doubtless fill the brush and prevent the action of the "teredo," while the grillage will be protected by the mud at the bottom.

The shoal from C to D commences about 4,000 feet from the mouth of the creek and continues a distance of 3,000 feet from Mud River to Lathram River, streams flowing westward from Jekyl Creek.

This shoal is no doubt formed by the combined action of these rivers and the meeting of the tides when uninfluenced by the winds.

PROJECT OF IMPROVEMENT.

There are two methods that suggest themselves for the improvement of this channel: 1st. By submerged dams across the outlets of Lathram and Mud rivers, E to F and G to H. 2d. By a training-wall from C to D, a distance of 3,000 feet, narrowing the channel and thereby increasing the velocity of the water when a scouring ebb-tide is forced through by the winds.

This method involves a much larger outlay than by the first one, of submerged dams, and I doubt if it will prove as efficient. I therefore recommend the method of submerged dams, about 4 feet high and 10 feet wide, of low palmetto cribs, built upon a grillage of pine logs, giving a bottom width of 14 feet.

ESTIMATES.

1st. I estimate the cost of the training-wall for the mud flat, to be constructed 4 feet high and 12 feet wide, upon a 16-foot platform, to cost $5 per linear foot, *i. e.*, 2,500 feet	$12,500
Add 10 per cent. for contingencies	1,250
Total cost	13,750
2d. I estimate the cost for the submerged dams at $5 per linear foot, and their aggregate length being about 1,100 feet, their cost, with 10 per cent. added for contingencies, will be	6,050
Which will give the aggregate cost of this improvement at	19,800

The details of the estimate are appended and marked A.

Should the single training-wall on the north side of the creek fail to give the desired

depth of water, a second one nearly parallel with the first one on the south side will become necessary. (See chart.)

I regard this improvement as permanent and durable.

WHY THIS IMPROVEMENT IS NECESSARY.

The improvement herein recommended is rendered necessary by the demand for freight and passenger transportation of a large population, for its cotton, rice, and naval stores, lumber, and merchandise, through this creek, which is obstructed by shoals that at times greatly impede the progress of vessels.

THE EXTENT OF COUNTRY THAT WILL BE BENEFITED BY THE IMPROVEMENT.

The entire coast line, inland, for a distance of about 50 miles in width (if we reckon the area of country bordering on the lateral rivers that are tributary to this line of transportation), from Savannah to the Saint John's River, and as far up that river as Pilatka.

The winter travel is very large, embracing tourists from most of the States of the Union, and in summer only those living in the vicinity of the line.

Five large steamers of very light draught are now employed most of the year in the trade and travel requiring the use of this route. There is, besides, a daily line of boats, carrying through mails between Brunswick and Fernandina.

It is believed that a considerable increase in commerce will be attracted to the line by the permanent improvement herein recommended.

The amount of population that will derive benefits from the improvement may be estimated at 200,000.

The collection district is Brunswick, Ga. The nearest port of entry is Brunswick. The nearest light-house is Saint Simons. The nearest fort is Clinch. The amount of revenue collected at the nearest port of entry during the last fiscal year was $21,381.48.

The general benefits to the country to be derived from the improvements will be in supplying inland water communication between the Savannah and Saint John's rivers, a distance of more than 200 miles, entirely sheltered from the attacks of an enemy, in case of war with a foreign power.

I am, very respectfully, your obedient servant,

S. L. FREMONT,
United States Assistant Engineer.

Maj. Gen. Q. A. GILLMORE,
Lieutenant-Colonel of Engineers, U. S. A.

A.

DETAILED ESTIMATES PER LINEAR FOOT OF TRAINING-WALL, ETC.

For a training-wall—

Brush mattress 12′ × 4′ × 20′ = 960 cubic feet = 35.5 cubic yards, at 25 cents per cubic yard	$8	87.5
20 grillage logs, 12″ diameter at the smallest end, 16 feet in length, 320 feet, at 6 cents per foot	19	20
3 binder-logs, 20 feet long, at 6 cents per foot	3	60
80 pounds of ⅝-inch drift-bolts, 15 inches long, at 7 cents per pound	5	60
5 cubic yards of stone, at $3.50 per cubic yard	17	50
3 palmetto logs (selected), binders, 20 feet = 60 feet	6	00
60 long drift-bolts with large heads, 300 pounds, at 7 cents per pound	21	00
Per mattress of 20 feet	81	77.5
Per linear foot	4	08.7

For palmetto cribs—

296 linear feet of palmetto logs, at 9 cents	26	64
280 linear feet of pine logs, at 6 cents	16	80
250 pounds drift-bolts, at 7 cents per pound	17	50
30 cubic yards brush, at 25 cents per cubic yard	7	50
5 cubic yards stone, at $3.50	17	50
Per crib of 20 feet	85	94
Per linear foot	4	29.7

S. L. FREMONT,
Assistant Engineer.

EXAMINATION FOR THE IMPROVEMENT OF WAPPOO CUT, SOUTH CAROLINA.

UNITED STATES ENGINEER OFFICE,
New York, November 22, 1880.

GENERAL: I have the honor to submit the following report of an examination of "Wappoo Cut," South Carolina, with estimates of the cost of works of improvement, as provided for by section 2 of the river and harbor act, approved June 14, 1880, and assigned to my charge by letter of June 17, 1880.

The examination was made by Capt. J. C. Post, Corps of Engineers, my assistant at Charleston, S. C. His report with accompanying sketch is herewith inclosed.

Wappoo Cut is a narrow, tortuous, tidal stream, to the north of James Island, connecting Ashley and Stono rivers.

The mean rise and fall of tides in Wappoo Cut is about 5 feet. The general direction of the stream is east and west, and it forms an important link in the inland water-route connecting Charleston Harbor with a considerable area of the coast district south of that city.

The length of the Wappoo Cut Route, as generally used, is about $5\frac{1}{4}$ miles. It varies in width from 60 feet to 200 feet, and in low-water depth from 1 foot to 13 feet, the shoalest water being found in its westerly reaches.

Captain Post's report shows Wappoo Cut to be of considerable importance as a commercial route. During the past year the aggregate value of freight of all kinds passing through amounted to nearly $3,000,000. The bulk of it consisted of sea-island cotton, rice, and phosphate fertilizers. It is stated that this trade is annually increasing, and that it would be still more rapidly developed by a suitable improvement of the passage.

The plan of improvement suggested by Captain Post, which contemplates the creation of a channel of 6 feet minimum depth and 90 feet width at mean low-water is approved. It comprises the following details of work:

1. Dredging on bar at the entrance into Ashley River.
2. A solid cut through the marsh at the end of the first easterly reach, $2\frac{1}{2}$ miles from Ashley River.
3. Dredging in Elliot's Cut, as well as in the reach leading to it, and on the bar at the outlet into Stono River.
4. Closing the three tidal-streams that enter this new direct route from the north by light bulkheads.
5. Building a jetty at the Ashley entrance, to guide the flood-tide into Wappoo Cut, and
6. Building a jetty at the Stono entrance, to guide the ebb-tide into the cut.

From the fact that high and low water occur about an hour later at the Stono terminus of the passage than at the Ashley entrance, currents run through the cut in a westerly direction during a greater part of the flood-tide, and in the opposite direction during a great part of the ebb-tide. These favorable conditions will be not only preserved, but probably strengthened, by straightening and deepening the passage. In that case, there would practically be no intermediate place where the tides would "meet" or "divide," and one of the principal causes for shoaling would disappear.

It is possible that after carrying out the works here recommended it may be found desirable to straighten the passage still more, by a cut to

avoid the first great bend situated about 1½ miles from Ashley River, but since this bend has sufficient depths and widths, it is not considered as offering serious obstructions to navigation. As the value of such a cut would consist chiefly in still more shortening and straightening the passage, its execution may be held in abeyance for the present.

This improvement is located in the collection district of Charleston. Charleston is the nearest port of entry.

The amount of duties on imports collected in the year 1879 was $24,070.

For further particulars concerning this route, I beg leave to call attention to Captain Post's report.

The estimated cost of the improvement, including ten per cent. for contingencies, is about $34,000.

There has been no previous appropriation made by the government for the work.

Very respectfully, your obedient servant,

Q. A. GILLMORE,
Lieut. Col. of Engineers, Brt. Maj. Gen., U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF CAPTAIN JAMES C. POST, CORPS OF ENGINEERS.

UNITED STATES ENGINEER'S OFFICE,
Charleston, S. C., November 15, 1880.

COLONEL: In compliance with the instructions contained in your letter of August 2, 1880, I have to submit the following report of the examination of Wappoo Cut, S. C., together with a plan and estimate for its improvement.

Wappoo Cut or Creek is a narrow, tortuous, tidal stream connecting the Ashley and the Stono rivers, and forms a portion of the only inland route for navigation between Charleston Harbor and the country south of it. It intersects the Ashley River opposite the city of Charleston, about 6 miles from the outer harbor, and joins the Stono River about 13 miles from its mouth. Its length by the channel now principally used, as indicated by the dotted black line (see inclosed sketch), is 5¼ miles, and its width varies from 200 feet in the first 3½ miles from the Ashley River, which is nearly uniform, to 60 feet at its junction with the Stono River, where it has the least width. Passing from the Ashley River, the first 2½ miles, which is comparatively straight, contains not less than 8 feet of water at low-water, with the exception of the bar at its mouth. This latter had formerly only 2 feet of water upon it at low-water, but since the creek has become of such importance the frequent passage of steam-tugs has increased the depth to 4 feet at low-water. At the extremity of 2½ miles there is a shoal upon which there is but 4 feet of water at low-water. Beyond this the creek takes an exceedingly tortuous course through the marshes, and is nearly three miles in length before it meets the waters of the Stono River, while in a straight line the distance is less than a mile. The depth in this portion varies from 1 foot to 13 feet at low-water.

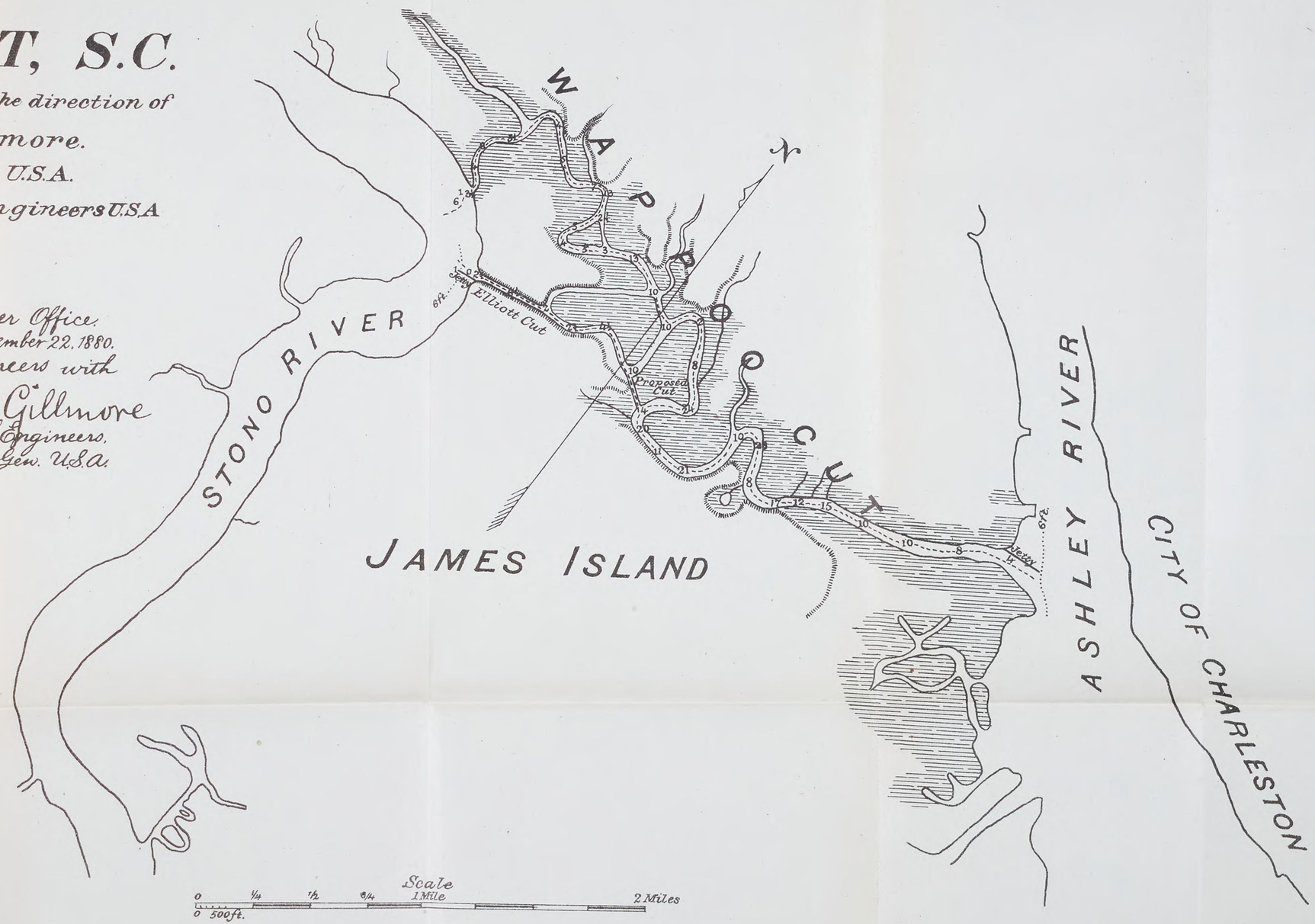
A number of years ago, before the late war, the increasing importance of this creek and the difficulties encountered in navigating the last two miles and in crossing the bar at the Stono entrance, induced the State of South Carolina to make an appropriation for opening a straight cut about 1,500 feet long, now called Elliot's Cut (see sketch), connecting one of the principal bends of the creek with the Stono River. This cut, which I am informed was made 6 feet deep at low-water, and about 90 feet in width, reduced the distance from the Ashley to the Stono River about a mile. At the time the cut was made the reach passing into it from the eastward was 125 feet wide and from 7 feet to 20 feet deep at low-water. The cut and reach have since shoaled, until now there is but from 2 feet to 4½ feet at low-water through them, and a bar has formed at the Stono entrance of the cut, over which there is scarcely a foot of water at low-water. These changes took place largely during the war, when this creek was seldom used, and have been added to since by the increased depth in the old channel caused by the frequent passage of steam-tugs to and from the phosphate works on the Stono, Coosa, and Bull rivers, to Charleston Harbor. These tugs preferred the old channel with its sharp bends and greater length, where the bottom was soft and could

SKETCH
of
WAPPOO CUT, S.C.

from an examination made under the direction of

Bvt. Maj. Gen. Q.A. Gillmore.
Lieut. Col. of Engineers U.S.A.
by Capt. J.C. Post, Corps of Engineers U.S.A
in October 1880.

U.S. Engineer Office.
New York, November 22, 1880.
Forwarded to the Chief of Engineers with
my report of this date.
Q. A. Gillmore
Lieut. Col. of Engineers,
Bvt Maj. Gen. U.S.A.



House Ex. Doc. No. 19.
3d. Sess. 46th Cong.

be easily cut out by their wheels, to Elliot's Cut and its firmer deposit, which is composed principally of sand.

The great importance of this creek can readily be seen from the amount of commerce passing through it yearly. By reliable persons this was estimated to have amounted to about $2,800,000 during the past year, and comprised as follows, viz:

7,000 bags sea-island cotton, at $120 each	$840,000 00
400,000 bushels of rice, at $1.50 each	600,000 00
80,000 tons phosphate rock, at $7	560,000 00
Naval stores	100,000 00
Vegetables and truck farming	100,000 00
General traffic	600,000 00
	2,800,000 00

All of these productions of the country south of Charleston are increasing yearly, notwithstanding the difficulties of navigating this creek tend to retard their development by forcing a portion of the commerce to reach Charleston by taking the risks of the open sea. It is not improbable that the proper improvement of this creek will at once increase the amount of the commerce passing through it very considerably above the foregoing estimate.

PLAN OF IMPROVEMENT.

To make a channel 90 feet wide and 6 feet deep at low-water from the deep water of the Ashley to that of the Stono River, which I am informed will be ample for all steamers passing through this creek, I would respectfully suggest that the bar at the Ashley entrance be dredged, that a straight cut be made through the marsh, from the bend at the extremity of the 2½ miles before mentioned, to connect with the reach opening into Elliot's Cut, and that this reach, Elliot's Cut, and the bar at its mouth be dredged. This will reduce the distance from the Ashley to the Stono River to 3¼ miles. It will also be necessary to cut off all the streams emptying into this direct channel from its north side to prevent the possibility of the formation of shoals at the junction. The results of the tidal observations which have been taken at the extremities of the present channel show that the tide at the Stono end of the creek is about an hour later than that at the Ashley, and that both the flood and the ebb tides during three-fourths of their flow pass entirely through the creek from the Ashley to the Stono River, and *vice versa*. By reducing the length of the channel, as proposed, it is expected that nearly the whole if not all of these tides will flow entirely through the creek from the Ashley to the Stono River and return, without there being a place of meeting of the waters from the two rivers on the flood or division on the ebb anywhere in the creek. It seems fair to assume that this will be the case, as the distance from the junction of the creek with the Stono, which is 13 miles from the sea by the Stono, will be but 9¼ miles from the sea by the creek and the Ashley, and the creek will be comparatively free from bends to retard the tidal flow.

Should this take place, as appears probable, I do not apprehend that there will be any difficulty experienced in keeping the two bars open at the extremities of the new channel after they are once dredged. As it is possible, however, that some aid may be required to keep these bars from reforming, I have added to the estimate, to make the plan complete, the cost of constructing two jetties, composed of wood and stone, one to be placed at each bar. That at the Ashley should be located, as shown on the sketch, to narrow the channel across the bar and deflect the flood-tide into the creek. It should average 20 feet wide at the base and extend from the shore to the 6-foot curve, a distance of 1,000 feet. The one at Stono should be located, as shown on the sketch, to narrow the entrance across the bar and deflect the ebb-tide into the creek. It should also average 20 feet wide at the base and extend to the 6-foot curve, a distance of 600 feet. The total estimate for the dredging is 100,000 cubic yards, 10,000 cubic yards to be removed from the Ashley Bar, 30,000 cubic yards from the Straight cut, 800 feet long through the marsh, 35,000 cubic yards to be removed from the reach joining Elliot's Cut, and 25,000 cubic yards from Elliot's Cut and the bar at its Stono extremity. To close the three streams entering into the new channel from the north, it is proposed to make a slight structure of piles and boards, one that is sufficiently strong and will last long enough to keep the dredgings in place, which should be dumped in rear of it, until they harden.

The total length of this bulkhead will be 700 feet.

The following is the estimate of the cost of these improvements, viz:

100,000 cubic yards of dredging, at 18 cents per cubic yard	$18,000 00
1,600 feet of jetty, at $7.50 per linear foot	12,000 00
700 feet of bulkhead, at $1.50 per linear foot	1,050 00
Contingencies, 10 per cent	3,105 00
Total	34,155 00

The jetties should be raised to the line of average high-water.
The average rise and fall of the tide in the creek is 5 feet.
This improvement is located in the collection-district of Charleston. Charleston is the nearest port of entry.

Very respectfully, your obedient servant,

J. C. POST,
Captain of Engineers.

Lieut. Col. Q. A. GILLMORE,
Corps of Engineers, U. S. A.

EXAMINATION FOR THE OPENING OF A SHIP-CANAL ACROSS THE CHARLESTON NECK, SOUTH CAROLINA.

UNITED STATES ENGINEER OFFICE,
New York, November 27, 1880.

GENERAL: I have the honor to submit the following report on the examination for the opening of a ship-canal across the Charleston Neck, South Carolina, provided for in the act of Congress approved June 14, 1880.

This duty was assigned to me by letter from the office of the Chief of Engineers, United States Army, dated June 17, 1880.

The examination was conducted by Capt. James C. Post, United States Corps of Engineers, whose report is herewith transmitted.

Charleston Neck is a narrow peninusula, extending down into Charleston Harbor in a southerly or slightly southeasterly direction, and is bounded on the west side by Ashley River and on the east side by Cooper River and a branch of the same called Town Creek.

The average width of the neck for a length of 6 miles, measured from the extreme point in the harbor, is about $1\frac{3}{4}$ miles, and the rivers on both sides for this entire distance, and still higher up, are navigable for vessels of deep draught, with bold shores generally favorable for the construction of wharves and piers.

The city of Charleston occupies the lower extremity of the neck, on the harbor. The present wharves extend on Cooper River a distance of about $1\frac{3}{4}$ miles, and on Ashley River a distance of about 2 miles, from the extreme southerly point of the Neck.

There is therefore a long unoccupied water-front, bordering on streams of ample depth, on each side of the Neck adjoining the built-up portion of the city and within the "city limits."

The wharves on Ashley River are scattered and infrequent, nearly all the shipping business of the place being transacted on the Cooper River.

The railroad business of the place is transacted by three lines, to wit, the Northeastern Railroad, having a northern and western connection by way of Florence; the South Carolina Railroad, extending to Columbia; and the Savannah and Charleston Railroad to Savannah, with a western connection at Yemassee, by way of Port Royal Railroad. The Northeastern Railroad possesses wharfage facilities of moderate capacity on Cooper River, and the Savannah and Charleston Road has the same on the west bank of the Ashley River, at a point where its bridge-crossing formerly existed. The track of the South Carolina Road does not reach tide-water at any point. Its depot in the city is a trifle over $\frac{3}{4}$ of a mile from deep water.

The location selected by Captain Post for the ship-canal crosses the peninsula on a straight course, running south $78\frac{1}{2}$ degrees west from

Town Creek to Ashley River, at a distance measured on a normal right line of 2⅞ miles from the southerly point of the Neck. It lies outside the built-up portions of the city. On the line suggested, the length of the canal would be 10,550 feet.

The line of the canal will of course cross that of the South Carolina Railroad, as well as that of any other road which may hereafter enter the city by way of Charleston Neck.

It will be observed that Captain Post does not advance any reasons why this work should be undertaken at the expense of the United States, nor does he mention any of the objects sought to be attained, and the advantages to general commerce and navigation to be derived from it, beyond a simple reference to a letter from General B. H. Rutledge, embodying a discussion by that gentleman of this branch of the subject.

From the views expressed in General Rutledge's letter, and from statements both written and oral received from other sources, it is believed that the objects sought to be attained by the construction of this canal may be classed under four general heads as follows:

1. That the canal will establish close connections between sea-going vessels and all railroad lines now entering or which may hereafter enter the city of Charleston by way of the Neck, thus supplementing the improvement of the outside bar now in progress, which would otherwise be incomplete in its beneficial results.

2. That the construction of this canal will place the railroad connections directly at the sea, and thus develop the trade and commerce of Charleston, and benefit the interior and the great West by supplying a convenient shipping port, open at all seasons of the year and possessing excellent terminal facilities.

3. That the canal will facilitate the construction and lessen the cost of the works of improvement on the outer bar, by enabling the United States to procure stone from the quarries near Columbia, South Carolina.

4. That the canal, if built by the United States, will or may afford free wharfage, thus releasing the shipping interests from the wharf-charges now imposed by the individuals or private corporations owning the present wharves in the city of Charleston.

With respect to the plan now being carried out for improving the ocean approach to Charleston Harbor, at the outer bar, it is respectfully submitted that when that plan was prepared in this office the works necessary for forming close and convenient connections for handling freights in the city of Charleston, either by digging a canal to the railroads, or by extending the railroad tracks to the water, or by any other method, were considered to be mere details of terminal facilities, which those charged with the carrying business would provide as soon as it became their interest to do so. The same view is entertained now, and no case is remembered where the general government has charged itself with such local matters.

The sole object of the improvement of the outer bar was, and is, to establish a safe and convenient channel by which deep-draught vessels can enter and leave the port of Charleston and discharge and receive their cargoes in quiet water at the wharves of the city. There is no reason to doubt that this result will be attained at a cost somewhat below the original estimate of $1,800,000.

The cost of these works on the main bar would, no doubt, be lessened in some slight degree by improving the facilities for handling railroad freights at Charleston, so that stone could be brought in the required quantities from the quarries near Columbia and delivered to scows or lighters directly from the cars.

The Northeastern Railroad is doing this now, under a contract to transport the stone from Columbia to the wharf at Charleston for $1.50 per gross ton. Freights on stone from New York to Charleston have ranged from $1.45 to $1.75, or an average of $1.60 per gross ton.

The gain, therefore, is comparatively small, not exceeding about 4 per cent. of the total cost of stone from New York delivered on the works.

It seems proper to state that, so far as work on the harbor improvements is concerned, a slip or basin of suitable capacity for the service of lighters, excavated from Ashley River to the track of the South Carolina Railroad, at a cost of $15,000 to $20,000 at the outside, would answer quite as well as the ship-canal. A branch track to deep water could, perhaps, be laid for a less sum, and would accommodate large vessels.

It would seem, indeed, that when the South Carolina Railroad shall have extended its tracks to deep water—and it is understood to be its intention, as it obviously is to its interest, to do so, unless deep water is brought to its tracks—all the substantial advantages of the much needed close connections between ships and railroads will have been fully secured, inasmuch as the other railroads already possess wharfage facilities.

The present wharf-charges, however, would still remain, and it is admitted that a release from them is very desirable. One question in this connection is, Ought the general government to be charged with its achievement? Another is, Would free wharfage be achieved by the construction of the canal?

The plan for this canal, prepared by Captain Post, is believed to be both comprehensive and feasible, and well adapted to the special objects in view, to-wit, convenient facilities for the interchanging of freights between railroad-cars and ships.

The legislature of South Carolina has appropriated the sum of $15,000 towards its construction. This sum is now at the disposal of the canal commission created by the same authority, and preliminary steps have already been taken for excavating a slip from Ashley River to the line of the South Carolina Railroad, for the service of lighters to be used in conveying stone to the jetties on the outer bar.

ESTIMATED COST OF THE CANAL.

For a canal of 20 feet depth at mean low-water, a bottom width of 200 feet, side slopes of 1 upon 1, and tide gates at each end, and placing the cost of excavations at 11 cents per cubic yard, the additional cost of filling on the banks at 6 cents, the masonry of all kinds at an average of $9.50 per cubic yard, and 4 iron tide-gates at $3,000 each (all reasonably low prices), the estimated cost of construction, allowing 10 per cent. for engineering and contingent expenses, amounts to $439,789.

This does not include the cost of the right of way, and of the necessary railroad and highway bridges over the canal.

It is respectfully suggested as a preliminary and prudential measure to be adopted, preferably at the present stage of this enterprise, that the following questions should receive careful and intelligent consideration by a board or commission of engineers, or such other competent source of information as may be conveniently available:

1st. Shall the local facilities usually provided at the maritime termini of railroads be secured in the city of Charleston by digging a canal across the railroad tracks, or by extending those tracks to the unoccupied water-fronts of the city?

2d. If the canal shall be found to offer any advantages, and Congress

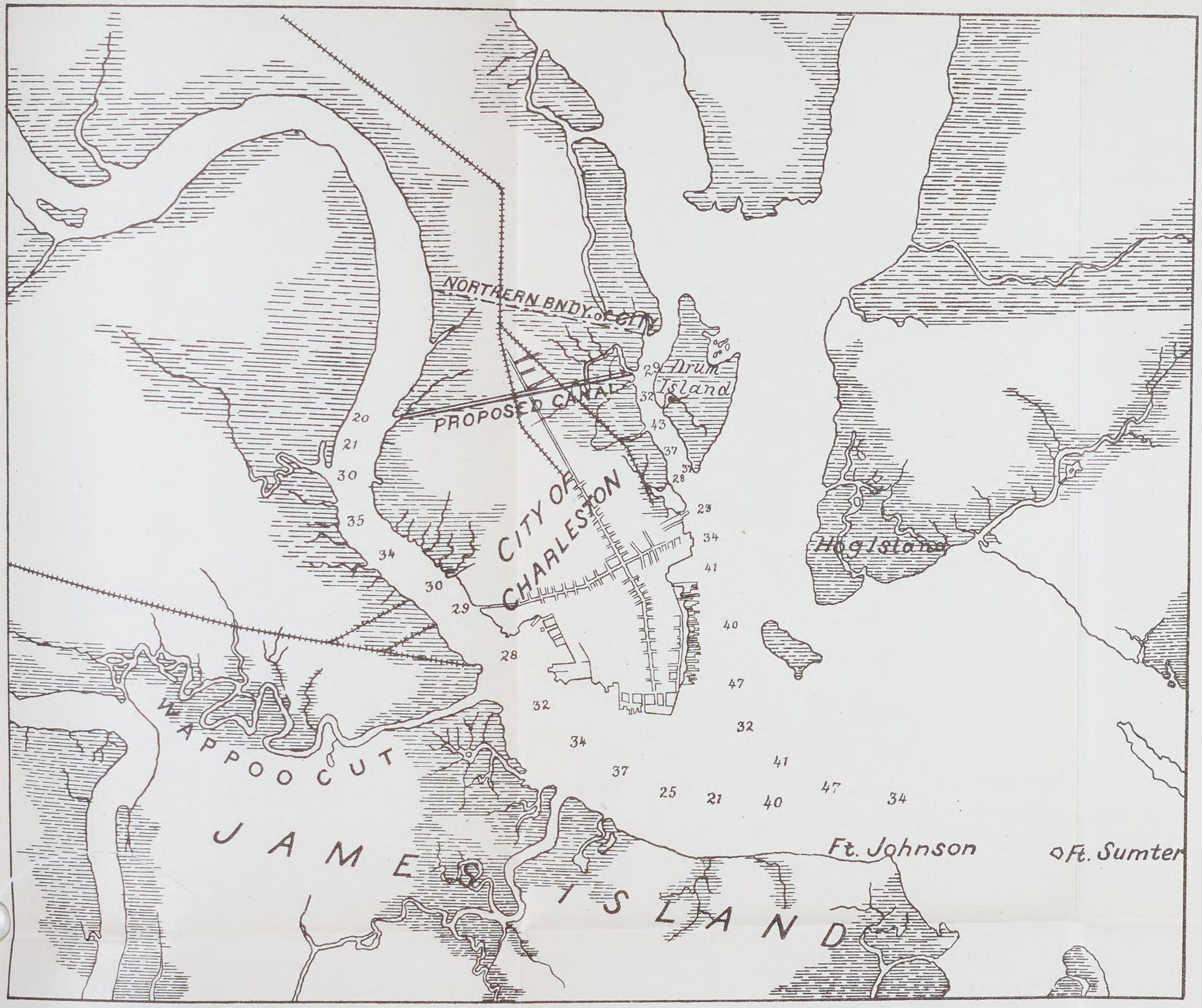


Chart showing location of proposed Ship Canal across Charleston Neck

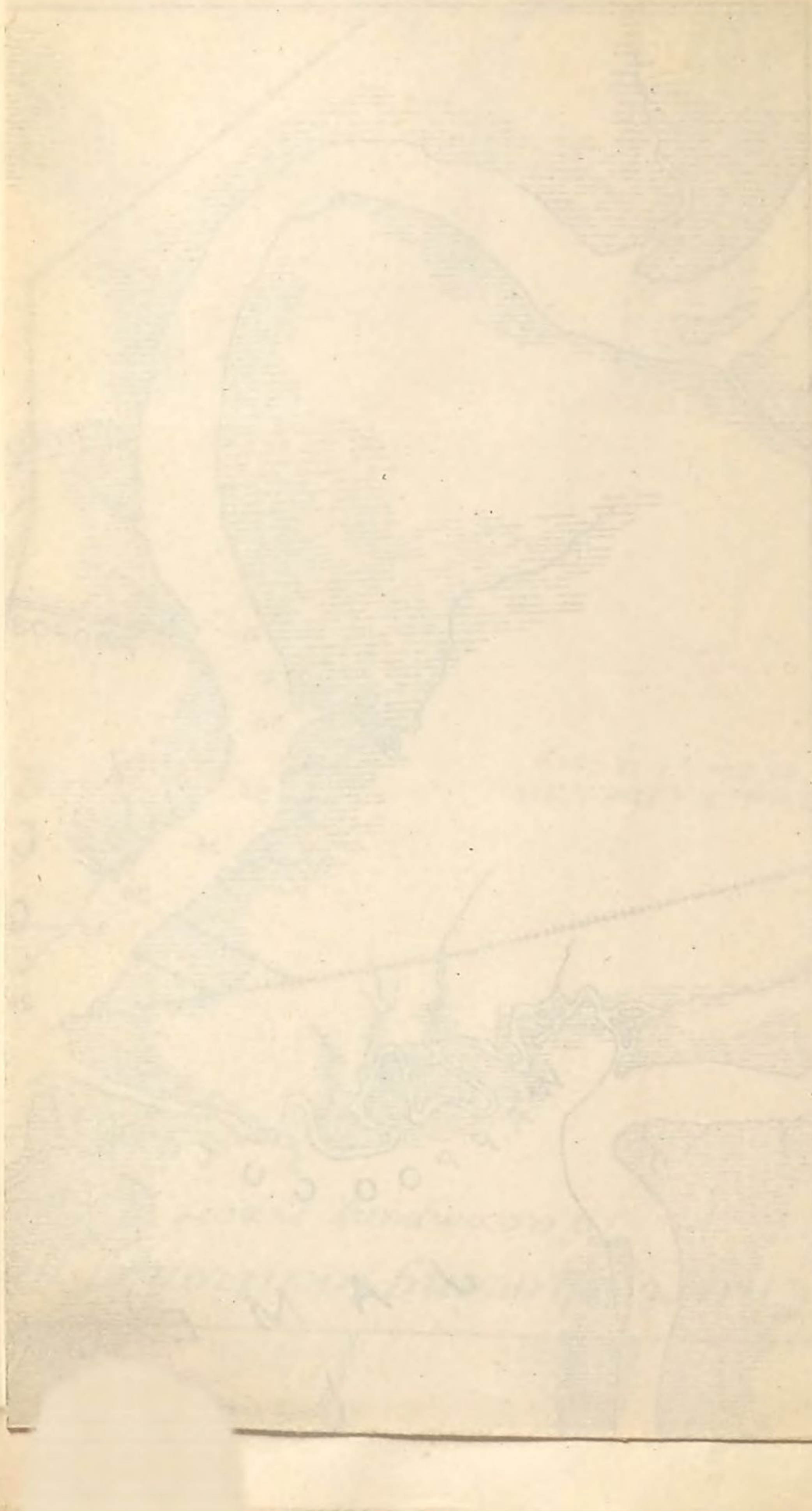
To accompany report of Captain J.C. Post, Corps of Engrs U.S.A.

U.S. Engineer Office
New York, November 27. 1880.

Forwarded to the Chief of Engineers, with my report of this date

D.A. Gillmore
Lieut. Col. of Engineers
Bvt. Maj Gen. U.S.A.

House Ex. Doc. No. 19.
3d. Sess. 46th Cong.



shall appropriate money to build it, the following points, and, doubtless, many others, seem to require careful attention before the work is begun, in order that complications growing out of the use and maintenance of the canal may be avoided as far as possible.

1. Who shall furnish the right of way?

2. At whose expense shall the canal be operated and maintained?

3. Shall there be a right of way free to all on each side of the canal; and, if so, who is to furnish it and prescribe its width?

4. Shall parties owning lands on either side have the exclusive use of the canal bank along their water-front; and, if so, upon what terms?

5. Shall storehouses be erected on the banks of the canal; and, if so, upon what terms?

6. If storehouses are erected, who is to fix the storage rates?

7. What precautions, if any, can be taken to prevent the storage rates from becoming as burdensome as the present wharfage rates?

The following papers are herewith transmitted.

1. The report of Capt. J. C. Post, Corps of Engineers, U. S. A.

2. A sheet of drawings showing a profile along the line of the canal, and a map, on a smaller scale, of Charleston Neck.

3. A copy of the act of the legislature of South Carolina, providing for the construction of a canal in the city of Charleston, approved December 23, 1879; also copy of an act amendatory thereto, approved February 19, 1880.

4. A letter from General B. H. Rutledge, to Capt. J. C. Post, dated Charleston, November 18, 1880.

Very respectfully, your obedient servant,

Q. A. GILLMORE,
Lieutenant-Colonel of Engineers, Brt. Maj. Gen., U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF CAPT. JAMES C. POST, CORPS OF ENGINEERS.

UNITED STATES ENGINEER OFFICE,
Charleston, S. C., November 20, 1880.

COLONEL: In accordance with the instructions contained in your letter of August 2, 1880, I have to submit the following report of the examination and survey of a route for opening a ship-canal across Charleston Neck, South Carolina:

Charleston Neck is a narrow strip of land or peninsula several miles in length lying between the Ashley and Cooper rivers. It supplies the only land approach from the interior country to the city of Charleston, which is situated at its southern extremity, at the confluence of the two rivers.

The project of connecting the waters of these rivers, north of the city, by an open cut or canal, was first proposed, I am informed, by Mr. J. R. Poinsett in 1820, who was at that time member of Congress from this State. Again, in 1832, the construction of this canal was advocated, and a preliminary survey was made to assist in locating it. After this, it was not agitated again, as far as I can learn, until 1872, when the city council of Charleston desired to open it as a means of draining the marsh lands in the suburbs of the city. For the purpose of making a survey and commencing the work, the council appropriated the sum of $5,000. Nothing was done, however, beyond the completion of the survey and the selection of a site. During the past winter, that of 1879 and '80, this project was brought before the legislature of this State in several petitions from many of the leading merchants throughout the State whose supplies reach them through Charleston. In these it was claimed that the construction of the canal, making a direct connection between the railroads passing out of Charleston and the waters of the harbor, would greatly facilitate the transfer of freight, develop the interior country, and start new enterprises by relieving all freight passing through Charleston of some of the most onerous charges now incurred.

In response to the petition, General B. H. Rutledge, of Charleston, introduced the bill, hereto appended, for the furtherance of the project. The bill, which became a law, provides for a commission to locate the canal, obtain the necessary land, and finally makes an appropriation of $15,000 for its commencement as soon as a satisfactory contract has been made for supplying stone from the State quarries for the Charleston jetties now under construction, or for other purposes. I also append a letter of General B. H. Rutledge, in which he states the advantages to be derived from the canal.

This was the condition of the project at the time Congress was memorialized and asked to appropriate means for a survey and estimate of the cost of the canal. Since this time a contract has been made with the State authorities for stone, and the $15,000 appropriated has been placed at the disposal of the canal commissioners. With this money it is intended to commence the opening of the canal by making a cut 1,400 feet long, with a bottom width of 50 and a depth of 12 feet at low-water. A quay along the north bank of the canal will also be built 1,200 feet long.

The survey for the canal was commenced by running three trial lines across the neck; two of these were soon abandoned as greatly exceeding the third in cost. A drawing, showing the location of the third, or line of least cost, is inclosed with the report. It is also accompanied by a chart of this harbor giving the position of this line with reference to the city. The distance from low-water on the Ashley River to the Cooper by the line as located is 10,550 feet, 4,285 feet of which is high land of an average height of 9.7 feet above mean low-water line, and the remainder salt marsh about 4.5 feet above the same line. As the mean rise and fall of the tide is 5.1 feet, the latter is covered at nearly all high waters. To accommodate the deepest-draught shipping entering this port the canal should be cut at least to the depth of 20 feet below mean low-water, and should have sufficient width to allow a vessel to pass between two others lying on opposite sides of the canal. As it is the intention to construct a quay for vessels along both sides of the canal, the bottom width can alone be considered in deciding upon the width to be given to it. Estimating the beam of a vessel at 45 feet, which is as great as most of the shipping are now constructed, a canal 150 feet wide at the bottom would leave but 60 feet for a third vessel to pass. This appears scarcely sufficient to prevent the spars of vessels from becoming entangled, even if the vessels themselves did not collide. I have, therefore, estimated the proposed ship-canal as being 200 feet wide at the bottom.

Borings were made at both ends of the line selected for the canal, to ascertain the nature of the subsoil. At both extremities this was found to consist of a top layer of very soft mud, beneath which were layers of sand and clay until a depth of 26 feet below low-water was reached. At this depth a very stiff yellow clay was encountered, which was penetrated 2 feet. From the same conditions being found at both rivers, it would seem proper to assume that this stratum of stiff clay lies nearly level, and that there will be no difficulty in dredging the canal to the depth desired. This stiff clay will also assist materially in forming a foundation for any necessary work that may be erected along the banks.

The tidal observations which were made show that there is practically no difference between the times of rise and fall of the tides at the canal extremities. The tides will therefore meet midway in it when it is completed and tend to form shoals, unless some measures are taken to prevent it. For this purpose I would suggest that a tide or guard gate be placed with its junction with each river. These may be opened and closed in such a way as to cause the tide to flow in one end of the canal and out of the other. Their use need only be occasional, merely sufficiently frequent to scour out any shoals which may be forming. Should vessels of deeper draught than 19 feet be at any time in the canal, the depth of water could be increased to 25 feet, by closing the tide-gates at high-water.

The following is the total estimate for a ship-canal 200 feet wide at the bottom, with a depth of 20 feet below mean low-water, with slopes of 1 upon 1, tide-gates at each end, and banks on both sides on the marshes above mean high-water, formed of dredgings:

Dredging 2,461,900 cubic yards, at 10 cents	$246,190
Placing 600,000 cubic yards dredgings in banks, at 6 cents	36,000
Piers for gates, 8,000 cubic yards masonry, at $6	48,000
Foundations for piers	5,000
4 gates, $2,000 each	8,000
	343,190

This estimate does not include the cost of the rights of way for the canal, as it is thought that the State or canal commissioners should provide these free of cost. Neither does it include the cost of the bridges necessary to pass over the canal. These will probably consist of two railroad bridges and two bridges for public highways. It is suggested that these be provided for in a similar manner as the rights of way.

The necessary dredging to reach 20 feet mean low-water in the Cooper and the Ashley rivers is included in the estimate.

This improvement is located in the collection district of Charleston. Charleston is the nearest port of entry.

Very respectfully, your obedient servant,

JAS. C. POST,
Captain of Engineers.

Lieut. Col. Q. A. GILLMORE,
Corps of Engineers, U. S. A.

No. 97.—AN ACT to provide for the construction of a canal in the city of Charleston.

COMMISSION CREATED—TERM OF OFFICE.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the State of South Carolina, now met and sitting in general assembly, and by the authority of the same,* That a commission to consist of five persons is hereby created for the purpose of constructing a ship-canal in the city of Charleston, between Line street on the south and the city boundary to the north, from such point on Ashley River to such point on Cooper River and along such line and direction as the said commission or a majority thereof shall select: *Provided, however,* That the consent of the city council of Charleston thereto shall be first had and obtained before said canal shall cross any street leading out of the city of Charleston. The said commissioners shall be appointed by the governor of the State and shall continue in office or be removed at the pleasure of the governor, who is also authorized and required to fill any and all vacancies so often as they occur in said commission.

POWERS OF COMMISSION.

SEC. 2. That for the purpose aforesaid the said commission is hereby authorized, after locating said canal, to acquire by purchase or otherwise any and all lands and any rights of way which may be needed in the location and construction of said canal, of a tramway, or railway-track or switch hereinafter authorized to be constructed: *Provided,* That the title to said lands and rights of way shall be taken in the name of the State, but the State shall not be liable for any debt contracted in procuring such right of way.

SIZE OF CANAL.

SEC. 3. That the said canal shall be of such width and depth as shall be determined on by the said commission or a majority of them, and as shall render the said canal navigable for all shipping entering Charleston Harbor. That in addition to the water-way of said canal, the said commission shall acquire, by purchase or otherwise, so much land as shall be needed to give a quay on each side of said canal not less than 200 feet in width and extending the entire length of the same, which quay so procured shall be declared forever free for the landing of all merchandise received at or shiped from Charleston.

MANNER OF OBTAINING LAND.

SEC. 4. That in all cases when any lands or private rights of way may be required by the said commissioners for the purpose aforesaid, and the same cannot for want of agreement between the parties as to price or any other cause be purchased from the owner or owners, the same may be taken and appropriated in the same mode and on the terms and conditions as is provided in section 75, chapter lxiii, title xiii, general statutes.

DOCKAGE FEES

SEC. 5. That a dockage fee not exceeding 1 cent per running foot shall be collected under the direction of said commission from each and every vessel in any manner using said quay; but for a simple passage of any vessel through said canal no charge shall be made.

SEC. 6. That said commission is hereby empowered to grant right of way to horse-railways or railroads along said quay free of charge.

TO ACCEPT AID FROM UNITED STATES OR CITY COUNCIL.

SEC. 7. That said commission is further empowered to accept such aid in the construction of said canal as may be granted by the United States Government or by the city council of Charleston, or by any corporation or individual whatsoever.

SEC. 8. That said commission shall have power to employ and discharge all persons who may be engaged in construction of said canal, and shall account quarterly to the comptroller for their receipts, expenditures, and disbursements.

TRAMWAY TO BE CONSTRUCTED.

SEC. 9. That for the purpose of connecting said canal or either of its proposed termini with any or all the railroads contiguous thereto, the said commission is hereby authorized to construct a tramway or railway-track or switch not exceeding 10 miles in length from any point on any of said contiguous railroads to any point on the line of said proposed canal as it may be laid out or surveyed, or to any point within ¼ of 1 mile from the line of said proposed canal: *Provided*, That the consent of the city council of Charleston shall not be required for carrying out the provisions of this section.

$15,000 APPROPRIATED.

SEC. 11. That for the purpose of carrying out the provisions of this act the sum of $15,000 be, and the same is hereby, appropriated, the same to be paid to said commission on the warrant of the comptroller-general upon satisfactory evidence being furnished to the comptroller-general of the execution of a contract or contracts for the purpose of raising granite from the quarries of the State, near Columbia, to be used in the construction of the jetties being erected in Charleston Harbor, by which contract or contracts convict labor of the State shall be hired, if the same can be furnished by the directors of the penitentiary, and if such convict labor cannot be so furnished, then by the use of other labor to be provided for by such contract or contracts, and by which said contract or contracts a royalty on said granite shall be stipulated to be paid to the State upon such terms and conditions as shall be approved by the governor, the comptroller-general, and State treasurer, or a majority of them.

Approved December 23, 1879.

No. 203.—AN ACT to amend an act entitled "An act to provide for the construction of a canal in the city of Charleston," approved December 23, 1879.

SECTION 10 STRICKEN OUT—PROVISO.

Be it enacted by the senate and house of representatives of the State of South Carolina, now met and sitting in general assembly, and by the authority of the same, That an act entitled "An act to provide for the construction of a canal in the city of Charleston," approved December 23, 1879, be, and the same is hereby, amended by striking out section 10 and inserting in lieu thereof the following:

SECTION 10. "That for the purpose of carrying out the provisions of this act the sum of $15,000 be, and the same is hereby, appropriated, the same to be paid to said commission on the warrant of the comptroller-general, upon satisfactory evidence being furnished to that officer of the execution of a contract or contracts by the board of directors of the South Carolina penitentiary to furnish granite from the State quarries, near Columbia, for the construction of the jetties for the improvement of Charleston Harbor, or for any other purpose or purposes, in such form and amount as in the judgment of the said board of directors of the penitentiary may be best for the advantage of the State, and to secure the return to the State of the sum of $15,000; all moneys received on said contract or contracts to be paid into the treasury of the State."

Approved February 19, 1880.

LETTER OF GENERAL B. H. RUTLEDGE.

CHARLESTON, S. C., *November* 18, 1880.

MY DEAR SIR: You ask me to give you my opinions as to the public advantage likely to result from the proposed Charleston ship-canal. This canal is not a new project. It has been agitated for many years. It was first spoken of in 1820. A preliminary investigation as to the best location of it was made in 1832, and in 1872, under an ordinance of the city of Charleston, its projected location was determined by survey. Since that time the enterprise has remained under consideration; but no direct steps have been taken for its accomplishment until recently.

The general purpose which the canal is proposed to accomplish may be stated briefly

as follows: The position of the city of Charleston is naturally and geographically favorable to its becoming the chief port, and most available for the purposes of commerce of any other port on the Atlantic seaboard south of the Potomac.

To illustrate this more fully, I make the following extract from a committee report to the Charleston Chamber of Commerce, presented and adopted March 29, 1880:

"The distance from Havana to Cincinnati by way of Charleston is 300 miles less than by way of Baltimore, 500 miles less than by way of New York, and 900 miles less than by way of Boston. Taking Saint Louis as the western terminus, the gain in distance is greater by about 150 miles. Charleston has the same advantage as regards the whole of the West Indies and Central and South America. This, it should be remembered, is on the basis of the line of railroad already completed. The building of the short links now wanting east and west of the Blue Ridge would increase the saving in distance more than 100 miles. And the new lines would pass through the heart of one of the richest countries in minerals in the United States, a region whose resources are to-day imperfectly known and entirely undeveloped. * * * The Gulf ports cannot compete successfully with Charleston, although to some port on the Gulf the West has been accustomed to look for an outlet for its produce and manufactures, receiving by the same channel West Indian and South American produce. * * * The West, moreover, has a large and growing trade with Europe, and for this trade, as compared with the Gulf ports, Charleston has no equal. By sailing vessels the usual run from Charleston to British ports is ten days less than from New Orleans. This difference alone is sufficient to make it to the interest of the West to trade through Charleston instead of sending produce a greater distance to the Gulf to make a longer voyage by sea. Charleston has the shorter line both ways. For European trade Charleston is upon as good a footing as the ports to the northward; and as the use of steamships becomes more general, any minor advantages the northern ports now possess will be done away with.

"Inward freights are low, inasmuch as the bulk of the present freight movement is outward. Emigrants can be brought into Charleston in safety and comfort at all seasons, and have a pleasanter as well as less dangerous voyage than by the northern routes. For European trade of any kind, in comparison with the Gulf ports, vessels trading with Charleston escape the dangers and delays of the Florida reefs; and for the West Indian trade, as compared with northern ports, vessels trading with Charleston are free from the hazards or discomforts of storm-bound Hatteras. Charleston, moreover, is on the sea. The deep water beyond the bar is only 6 miles from the city. Within the land-locked harbor, with deep water to the wharves, is ample room for the whole shipping of New York."

Several conditions must be fulfilled, however, before these material advantages can be made fully responsive to the requirements of commerce, foreign and domestic. In the first place, the water front must be more commodious and easier of access than at present, in order to provide sites for the erection of elevators and other structures requisite for the handling of heavy and bulky commodities. In the next place the entrance to the harbor must be deepened, so as to accommodate vessels of large draught. There is every reason to believe that this latter will be accomplished at no distant day by the jetties now in process of erection by the Government of the United States. But assuming perfect success to this wise and important enterprise, its results will be greatly enhanced and enlarged by the opening of this canal. With the completion of the canal both conditions demanded to make the port of Charleston a great outlet and inlet of commerce will be fulfilled—a commodious and inexpensive water front, in immediate juxtaposition with the sea.

It is scarcely possible to overestimate the advantage to the commercial interests of the country of such an achievement. This port is open at all seasons of the year. It is the shortest direct line from the heart of the continent to the ocean. It will secure the easiest and least expensive transportation for all the great products of the West to the markets of the world, and with a like facility imports will flow from abroad through the commercial avenues thus opened. It will tend greatly, from the ease and readiness of export and import, to originate trade and enlarge that already inaugurated with South America, the West Indies, and Europe.

One inestimable benefit will accrue to the whole country: There will be an Atlantic port never closed, always accessible, of easy approach, and ready at all times and seasons to meet the requirements of the nation.

These are my views, and in prosecution of them I labored in concert with other gentlemen of similar sentiments to secure the passage of an act from the State legislature authorizing the construction of such a canal. These efforts proved successful, and at the session of 1879 an act was passed providing "for the construction of a canal in the city of Charleston." A copy of this act is in your possession. At the adjourned session of 1880 the original act was amended, and a sum of $15,000 was appropriated for the purpose of opening one end of the proposed canal, and thus securing a connection with the deep waters of the Ashley River. This appropriation has been paid to the canal commissioners appointed under the act, and the work is in progress.

This merely preliminary step was taken in order to utilize the granite beds of the State near Columbia for the use of the Charleston jetties, for the double object of benefiting the State and her people and of saving expense to the Government of the United States in the cost of the rock. The general purpose of the act plainly appears from its context, and has been already explained.

I was of opinion when I advocated the measure and still think this enterprise worthy the consideration and encouragement of the national government. To finish this great work is beyond the capacity of the State government, and this was fully realized by the friends of the bill at the time of the passage of the act.

The act itself, in express terms, contemplates the necessity of aid from the Government of the United States. Its scope and object is to enlarge the commerce and unfold the resources of the nation. Whatever prosperity may accrue to this State from the consequences of its completion will be the result of causes which produce general benefit to the country.

Very respectfully,

B. H. RUTLEDGE

Capt. JAMES C. POST, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 20.

YOUGHIOGHENY RIVER.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

A report of the survey of the Youghiogheny River.

JANUARY 5, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 3, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, dated the 23d ultimo, and accompanying copy of report of Maj. William E. Merrill, Corps of Engineers, upon an examination of Youghiogheny River from its mouth to Connellsville, Pa., made in accordance with the provisions of the river and harbor act of June 14, 1880.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., December 23, 1880.

SIR: To comply with requirements of the river and harbor act of June 14, 1880, I have the honor to submit herewith a copy of a report to this office from Maj. W. E. Merrill, Corps of Engineers, of an examination of Youghiogheny River, with a view to the improvement of navigation from its mouth to Connellsville, Pa.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

YOUGHIOGHENY RIVER FROM ITS MOUTH AT M'KEESPORT, ALLEGHENY COUNTY, PENNSYLVANIA, TO CONNELLSVILLE, FAYETTE COUNTY, PENNSYLVANIA.

UNITED STATES ENGINEER OFFICE,
Cincinnati, Ohio, December 14, 1880.

GENERAL: I have the honor to submit the following report on the Youghiogheny River, ordered by the river and harbor bill approved June 14, 1880. The order for this report reads as follows:

Youghiogheny River, to begin at its mouth at McKeesport, Allegheny County, Pennsylvania, and end at Connellsville, Fayette County, Pennsylvania.

The whole of this distance has already been covered by surveys made under my direction in past years. The survey from McKeesport to West Newton, 19 miles, was made by Lieut. F. A. Mahan, Corps of Engineers, in 1874, and it is reported in the Report of the Chief of Engineers for 1874, Part 1, pages 558–566. The survey from West Newton to Connellsville, a distance of 25½ miles, was made in 1875 by my assistant, Col. T. S. Sedgwick, as a part of the survey for the extension of the Chesapeake and Ohio Canal from Cumberland to Pittsburgh.

This survey is reported in the Report of the Chief of Engineers for 1876, Part 2, pages 58–129. It was also published separately as Executive Document No. 137, House of Representatives, Forty-fourth Congress, first session.

For details I would refer to the above reports and to the maps that accompanied them, which are now on file in the office of the Chief of Engineers.

The whole distance from Connellsville to McKeesport, the point at which the Youghiogheny empties into the Monongahela, is 44⅓ miles. In this distance the river falls 148 feet.

To slackwater this distance would require 15 dams of 10 feet lift each.

The cost of these dams would vary greatly. In the lower end of the river there is an occasional appearance of sandstone rock on one side or the other of the river, but in no case does the rock extend more than a few feet from the bank. It practically amounts to building the lock and dam on a gravel bottom, thus necessitating an expensive foundation.

In my report of August 14, 1874, the estimated cost of a lock and dam on the lower Youghiogheny was stated at $230,000. Of this sum $50,000 was for the foundation of the lock. I do not see how this estimate can be materially changed, and therefore I present it again. As we ascend the river the cost of dams becomes less, and it is materially reduced as soon as we strike that part of the river having a bed of rock. No allotment was made for a resurvey of the Youghiogheny, and in view of the fact that careful estimates had been made on the three lower locks and dams, which ought to be built first, it was both impracticable and unnecessary to make careful estimates on the upper locks and dams. There will be abundance of time to make these estimates after the work of construction has begun, and meanwhile the resident engineer can become better posted as to the needs and the resources of this river.

Accompanying this report is a carefully prepared statement of the resources of the Youghiogheny Valley, and of the probable commerce that would be created if the river were slackwatered, which has been compiled by an expert statistician, Mr. George H. Thurston, of Pittsburgh. The following is a concise summary of the most important facts:

The Youghiogheny bisects a large basin of the finest coking coal in

the United States, being that from which the famous Connellsville coke is made. The demand for this coke is only limited by the available supply, and as it is used in blast-furnaces all over the United States it may be fairly classed as a national product, and therefore deserving of cheap transportation at national cost.

The coal lands lying within 5 miles of the Youghiogheny River, from its mouth to Ohio Pyle, are estimated at 830 square miles, with an aggregate workable thickness of 30 feet. The total amount of workable coal is therefore about 15,000,000,000 tons, whose value at $2 per ton is $30,000,000,000.

The Connellsville coal basin is 50 miles long by 3 miles wide, with from 8 to 9 feet of coking coal. It is estimated that it contains 768,000,000 tons, whose value is $1,536,000,000.

Youghiogheny coal is the standard steam coal of the West, and Monongahela coal is usually sold under this name.

The present commerce of the river is limited to three coal works in the pool formed by dam No. 2 of the Monongahela River. Their annual shipments are from 5,000,000 to 6,000,000 bushels of coal and coke, whose estimated value is $500,000. At all points above these works shipments are made by rail, and are practically limited to coke, as the coal cannot compete with the similiar coal which is transported by water on the pools of the Monongahela.

For the present I would only estimate on one lock and dam at a cost of $230,000, and I would suggest that this sum be provided in two equal annual installments, so that the work may be prosecuted with energy and economy.

Respectfully submitted.

WM. E. MERRILL,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. GEORGE H. THURSTON.

PITTSBURGH, *December* 1, 1880.

SIR: In compliance with your request for the facts relative to the present river commerce of the Youghiogheny River and its probable increase if slackwatered, I have the honor to report—

That the Youghiogheny, while geographically but a feeder of the Monongahela, and therefore but a secondary affluent of the Ohio, is a river of leading importance in the commerce of the country, because of its location in the heart of a most valuable mineral field, besides being a natural continuation from the headwaters of the Ohio, eastward, towards those of the Potomac and the waters of Chesapeake Bay, of a national water highway.

While its present river commerce is limited from want of sufficient permanent depth of water, its future river commerce may be, under a slackwater regimen of the stream, considered as prospectively large, arising as it will from the twofold power of natural resources and highway capabilities.

The utilizing of this water-course, as a link in a great national highway between the East and the valley of the Mississippi, has been a favorite idea with many advocates of such a national work; and in the early days of the republic the use of the stream for that purpose was earnestly advocated by General Washington.

In the rapid increase of the vast bulks of commodities daily interchanged between the various sections of the country, the necessity of a great water highway through the interior of the nation is becoming of commanding importance; under which need, the Youghiogheny loses nothing of the availibility it had in the eyes of Washington and his compeers of that early day.

The Monongahela and the Allegheny rivers, which form the headwaters of the Ohio, while available channels through valuable mineral sections, fail to have the im-

portance of the Youghiogheny. That stream, while bordered with all and probably more mineral deposits than these two other streams, heads in its waters so far to the eastward as to render by a short portage railroad direct communication with the Chesapeake and Ohio Canal and the waters of Chesapeake Bay practicable, while the waters of the two other mentioned rivers are from their course unavailable as links in a water connection with the eastern water highway.

The Youghiogheny, therefore, while but a feeder of the Monongahela, hydrographically is, from its geographical position, of a similar corresponding importance to the Ohio that the Ohio is to the Mississippi, and rises, under this force of position, from a State stream into one of national character, as forming a natural continuation of one of the grandest water-ways through a nation the geography of the world presents.

At present the Youghiogheny, except under occasions of very high floods, is only available for the purposes of transportation through the backing up of its waters for about 5 miles from its mouth by the slackwater of the Monongahela. The present river commerce of the Youghiogheny is therefore only such as the transportation of the coke and coal loaded at the few collieries within that distance aggregate.

There are in those 5 miles three coal tipples and one coke tipple, belonging to the coal works of three firms. At these tipples there is loaded from 5,000,000 to 6,000,000 bushels of coal and coke yearly, of a general commerce value of about $500,000. This is virtually all of the present *river* commerce of the Youghiogheny, there being no navigation above this point, except on rare occasions, as before observed, of very high floods. There are large transportations from all points on the river by rail of the products of the valley, but as transported by rail should not be classified as *river* commerce, which implies water carriage.

What would be the river commerce of the Youghiogheny if slackwatered is a question of future developments of natural resources, growth of local industries, and national ratios of increase, and is to be answered not only by the exposition of the coal and other mineral deposits along its course requiring cheap transportation, but from its prospective carrying trade as the eastern link of water communication between the West and the East.

The natural attraction of water transportation for all bulky and ponderous material renders it certain that could the waters of the Ohio be joined with those of the Chesapeake by a continuous and permanently navigable water-link, the traffic through that route would be simply enormous. Where the interruption of continuous water carriage is reduced to a portage of some 50 or 60 miles, the transportation results would be quite similar. It is fairly presumable that the Youghiogheny being slackwatered to the Ohio Pyle Falls, or further if practicable, the transportation wants of the country would quickly induce a portage railroad between the nearest points of the Youghiogheny slackwater and the Chesapeake and Ohio Canal.

Under such a system, barges loaded at Baltimore or points on the Chesapeake Bay could be taken without unloading to any point on the Mississippi or the Ohio or their tributaries, or from any point on these streams to the Chesapeake.

With a grand water-road sweeping by the Mississippi from the south and the north to the mouth of the Ohio, and by that river through the very center of the Union, and by the slackwater of the Youghiogheny to, say, within sixty miles of water carriage to the Chesapeake Bay and the Atlantic Ocean, it is but a question of brief time when commerce will eagerly grasp the helping hand which nature, in this water-way, extends to the transportation wants of the nation. Should the growth of the country continue in past ratios, there is apparently no way by which those wants can be so easily and so cheaply supplied.

Under this view of not merely possible, but probable, results, any estimates of the future river commerce of the Youghiogheny must be based not only upon the actual resources of the country through which the river runs, but on deductions from the statistics of the country, as indicating what that commerce will be when its statistics embrace the values of international transportation, as well as those of the mineral and manufactures, indigenous to its course.

The Youghiogheny is, in its course, most admirably located for transporting the immense mass of mineral through which it runs. The triangular section of Pennsylvania lying between the Chestnut Ridge of the Allegheny Mountains and the Monongahela and the Allegheny rivers, is a mass of mineral deposits especially so of coal. Through nearly the heart of this the Youghiogheny River runs. While on the southern and northern lines of this triangle the Allegheny and the Monongahela give water transportation to the coal and other heavy commodities, adjacent to their course, the Youghiogheny offers, if slackwatered, the very line of transportation best calculated to give the fullest facility for moving the very heart of this mass of mineral, else transportable to market only by the costly mode of railway carriage.

The course of the Youghigheny from its mouth at the town of McKeesport, on the Monongahela, about 15 miles above Pittsburgh, to Ohio Pyle Falls, measures about 83 miles. For that length, the river for a distance of 5 miles on either side, being an area

of 830 square miles, would be the natural channel of transportation of the coal deposits there.

The mass of coal to be mined in that area is difficult to accurately compute, while in general terms it may be said that the 830 square miles is a solid field of coal. Yet, strictly considered, there are erosions and faults that to some extent subtract from that area as of actual coal deposits. Approximately, however, it may be taken as a unit of calculation.

Throughout that area there are several seams or veins of coal of sufficient thickness to be worked, varying from 4 to 11 feet, and it is stated that within a workable depth there are 30 feet of available coal seams. This would indicate that in the 830 miles of coal area formed by width of 5 miles on either side of 83 miles of the river's course there are about 371,840,000,000 bushels, or 14,873,600,000 tons of bituminous coal, and that of the best and most desirable quality. This coal, if mined and sold, at the rate of $2 per ton, would be of a money value of $29,747,200,000.

That for this generation or the succeeding one the deeper veins of coal will be needed or mined is not possible, and therefore its transportation is hardly a factor in computing, for the present day, the commerce of the Youghiogheny River. The area of the main upper Pittsburgh seam, the Freeport seam, and the peculiar basin known as the Connellsville coking coal, are, however, pertinent to the question, as from those veins coal is now marketed.

The Connellsville coking coal basin is some 50 miles long by about 3 miles wide, almost without a fault, the beds yielding from 8 to 9 feet of workable coal. It would seem, then, that in this limited deposit alone there are, computing a yield of only 200,000 bushels to the acre, 768,000,000 tons of coal of a commercial value, at the current market rates of to-day, of $1,536,000,000.

The reputation of the coke from this coal is such that it commands an eager market throughout the United States wherever a mineral manufacturing interest is developed. The transportation of this by rail adds, from its ponderosity, greatly to the cost of the consumer, and therefore probably checking its use in many ways. The natural economies of the trade would, therefore, quickly divert its transportation from rail to river where water carriage could be made available to reach consuming points. The Youghiogheny bisects this especial coal deposit, and would, if slackwatered, give absolute water carriage for this coke without unloading over the waters of 27 Western rivers, reaching 377 counties in 20 Western States, having in those counties in 1870 a population of 7,834,908, and which, under the ratios of increase of the census of 1880, would have over 10,000,000 of inhabitants. It may be pertinently added here that to that extent of territory, to those varied fields of production and consumption, to that mass of population, would be given by the slackwatering of the Youghiogheny a water highway to the east, and cheap water carriage for their commodities, whether bought or sold.

But the coal product of the Connellsville coal basin is only the statement of a small fraction of the actual available coal tonnage of the Youghiogheny. In the 830 square miles, which an area of 5 miles on either side of the river from its mouth to Connellsville gives, the main Pittsburgh seams alone, averaging it at but a 4½ feet vein and computing but 100,000 bushels available coal to the acre, there are 53,120,000,000 bushels, or 2,124,800,000 tons of coal of the finest quality for gas and coking purposes, and of a value commercially, at $2 per ton, of $4,249,600,000. When the further fact is considered that this mass of coal is but one of the beds through which the Youghiogheny runs, some idea is created of what may be the future river commerce of that stream arising from coal alone.

Through this immense mass of coal the Youghiogheny at present runs uselessly, so far as it is available in carrying to market this vast transmutable wealth. Whatever development of these mineral resources there is, is due to the transporation facilities of the Baltimore and Ohio Railroad and its branches along the north bank of the river.

That development is now principally in the coal beds, and in those chiefly in the manufacture of coke; to what extent the following statistics show:

There are in the Connellsville coke region 6,520 ovens; of these 875 are on the Pittsburgh division of the Baltimore and Ohio Railroad; 2,199 are on the Mount Pleasant and Broadford branch of this road; 1,779 are on the Fayette County branch of the Baltimore and Ohio Railroad and the Southwest Pennsylvania branch of the Pennsylvania Railroad, and 1,667 on the southwest branch of the Pennsylvania Railroad. There are 3,000,000 tons of coke made annually at these ovens, of a present value at the mines of $4,500,000. About 6,000 men are employed, whose wages amount to $2,600,000 yearly. This manufacture of coke is chiefly confined to the north bank of the river, where railroads give facilities for transportation. Equally valuable coal, in immense deposit, lies on the south bank awaiting transportation facilities to be developed. Of this coke, according to statistics obtained from H. C. Frick & Co., Saint Louis, consumes yearly 14,000,000 bushels; Wheeling, 12,000,000 bushels; Cincinnati, 5,000,000 bushels; Ironton, Ohio, 3,000,000 bushels; and other points, on the Ohio and Missis-

sippi rivers, 5,000,000 bushels, while at Pittsburgh the consumption of Connellsville coke is about 25,000,000 bushels, or 500,000 tons yearly, being of a commercial value at the ovens of nearly $2,000,000.

The statistics of these consumptions are especially indicated, because if the Youghiogheny were slackwatered the coke which now reaches those points by rail would be delivered by water carriage.

A brief comparison of the freight rates by rail and those at which water transportation could be had shows how surely under water carriage this commodity would take water.

The rates of freight as quoted by H. C. Frick & Co. are from the mines to Pittsburgh, by rail, are 116⅔ cents per ton, or 2⅓ cents per bushel. By water it would be about 1 cent per bushel, or a saving of about 75 cents per ton. To Cincinnati the rate by rail is $4.20 per ton, or 8.4 cents per bushel; by water it would be 2 cents per bushel, or a saving of 6.4 cents, or over $3 per ton. To Saint Louis by rail the rate is $5.50 per ton, or 11 cents per bushel: by water it would be 5 cents per bushel, or a saving of about $3 per ton. From these figures a saving of nearly $2,000,000 would be effected in using water carriage.

The growth of the coal trade of the Monongahela, a stream running, like the Youghiogheny, through a solid field of coal, may be properly cited here as indicating the effect of slackwater on the development of the coal-mining industry of the Youghiogheny.

In 1844 there was passed through the locks of the Monongahela slackwater 737,150 bushels of coal, or about 7 acres. In 1854, ten years later, there were 17,331,946 bushels, or about 173 acres. In 1864 the output had increased 100 per cent over that of 1854, being 35,070,817 bushels, or about 350 acres. In 1874 it had increased nearly 100 per cent again, being 65,881,700 bushels, or 658 acres; and in 1880 it will be about 72,000,000 bushels, or 720 acres. It is pertinent to here observe that while this growth is the result of the demand caused by the increase of population and manufactures in the sections of the country reached by rivers, quite as much as it is a result of the slackwater facilities of the Monongahela, yet it is equally pertinent to note that the slackwatering of the Monongahela gave to the country a facility for obtaining an essential element in the growth of its industries, without which less rapid progress would probably have been made, and indicates, under the still rapid increase of the nation the greater importance in fostering that growth, that a coal-field so rich as the Youghiogheny Valley should be, by water transportation facilities, amply and cheaply able to bring its full force to the support of the industries of the nation and the comfort of the population.

In the slackwatering of the Youghiogheny and the development of the coal deposit of its shores, the gradual increase of the market for coal in the past thirty-six years of the Monongahela slackwater existence is not necessary to be awaited. In that past thirty-six years the population of the Western and Southwestern States to which river carriage of coal is practicable has increased from 4,600,000 inhabitants in 1850 to 7,843,908 in 1870, and under the ratios of increase up to 1880 there are approximately 10,458,844 population in the sections to be reached from the Youghiogheny by river. Under similar ratios of increase there should be in the same area in 1890 nearly 14,000,000 population calling for coal fuel. In the periods of time cited, the consumption of coal has been increased not merely from what may be termed the domestic uses of the population given, but by the increased manufacturing demand. For instance, in the seven States alone reachable by the water transportation on the Ohio, there were in 1850 but 36,277 factories; in 1870 there were 97,568, and under the same ratios of growth there would be in 1890 over 250,000. These figures indicate how the market for coal has increased, and apply prospectively to the future commerce in coal of the Youghiogheny.

The demand of this market has in the past thirty-six years consumed the coal along the Monongahela, to the extent of 10,762 acres, and the entire shipment has amounted to 1,076,279,622 bushels, or 43,051,115 tons. The demand for the coal of the Youghiogheny is such that it commands a preference of ¼ to ½ per cent. a bushel, leaving the inference that if there were the same facilities for the shipment of this coal as for that of the Monongahela, the development of the field would be rapid, and the future river commerce of the Youghiogheny greater even than that of the Monongahela; from which the slackwater company of that stream have received in tolls on coal in thirty-six years over $2,250,000, of which over $1,000,000 has been had in the past eight years.

While at the present date the coal deposits of the Youghiogheny are the most salient in the present and future commerce of that river, yet in a reconnaissance of the commercial power of that section, to which it is proposed to give greater strength, by the cheaper transportation facilities which the slackwatering of the river would create, the other valuable mineral deposits of the adjacent country, and other commercial resources, must not be overlooked.

The leading business of a section of country where good iron ore, limestone, and fuel

are in close proximity, is most likely to be manufacturing; and a dense mechanical population, with all their attendant transportation wants, occupy the ground.

Throughout the valley of the Youghiogheny there are five well-defined veins of good iron ores, from which acceptabie iron is made at five furnaces now in blast in that section, having a capacity of 1,300 tons a week. It is claimed that the Pittsburgh coal seam is throughout the Youghiogheny Valley underlaid, to its fullest extent, with a vein of 18-inch iron ore. In the neighborhood of Jacob's Creek, Westmoreland County, various veins of iron ore have been operated, popularly known as bottom-band ore, 3 feet thick—blue lump ore, 12 inches thick, big bottom ore, 18 inches thick, Hardmen's, or big honey-comb ore, 26 inches thick, and black slate flag, or kidney ore. The convenient deposit of ore, fuel, and limestone, in such quantities, is no slight factor in the estimate of the future river commerce of the Youghiogheny, under slackwater improvements of its navigation. Not only will the metal that may be produced by the furnaces located in and adjacent to the river be cheapened, but the limestone and the ores, as well as the fuel, be, under the inducements of water carriage, transported to other points. The twelve furnaces at present located at Pittsburgh use of themselves annually some 400,000 tons of limestone. The slackwatering of the Youghiogheny would enable it to be transported from the enormous formations of that stone on that river almost to the very stacks of the Pittsburgh furnaces by cheap water carriage. The figures given previously of the difference in freights in coke by river and by rail indicate how in so heavy an article as limestone the river commerce of the Youghiogheny, in event of slackwater facilities, would be increased.

Another item it is pertinent to here mention, connected as it is with the vast iron interest of the western country, and intimately with the Youghiogheny, as foreshadowing its future commerce, when slackwatered, especially from the close proximity to the immense iron and steel factories of Pittsburgh, to that stream, and their consumptions of foreign ores, old rail scrap, and various other forms of imported iron and steel.

A great tonnage in these iron and steel materials has, in the past few years, been yearly swelling the entries at the ports of New York and Philadelphia. From those ports to Pittsburgh, at least, the cost of railway transportation must add to the cost of the iron produced from those materials. To cheapen that cost in any or all particulars is of national interest.

Were the Youghiogheny slackwatered, and by portage connected with the Chesapeake and Ohio Canal, the natural port of entry for such importations of foreign iron material seeking western market would be at Baltimore, from whence they would have the advantage of water carriage, with the exception of a comparative small railway portage to Pittsburgh, or whatever other iron center demanded the material; which saving in freight would, in cheapening the cost of manufacturing, not only inure to the benefit of the consumer, but enable the manufacturers better to meet foreign competition. Of this iron material it is estimated 300,000 tons, including foreign ore, scrap old rail, steel, billet and foreign pig, have been used the past year at Pittsburgh and vicinity alone; and the probability of this tonnage swelling the future commerce of the Youghiogheny cannot well be omitted in making this report, nor should mention be neglected of the probability, if the proposed improvement of the navigation of the river is made, of a heavy tonage being added to its commerce from the iron ores of Virginia, of which such vast deposits lie along the valley of the James River, which ores could then be by water carriage delivered at Pittsburgh or any other point on the Western rivers.

Not alone to the transportation or use of coal, iron ore, and limestone is the resources of the Youghiogheny to develop a river commerce to be limited. Along the whole course of the river potters' and fire clay are deposited in great quantities. Four or five factories of fire-brick are now upon that stream, and cheap transportation by water carriage would undoubtedly lead to a development of these clays, and the building up of a large commerce in the shipment of this material, in its crude or manufactured forms.

A sand rock which when crushed yields fine sand for glass-making lies in extensive formations along the river; and though from its weight the heavy freights of the railway are antagonistic to the profitable prosecution of the business, yet sand glass is now largely produced at several points on the river. This article would, in event of the slackwatering of the Youghiogheny, be a certain accession to its future commerce; to what extent is indicated by the fact that the glass works of Pittsburgh, Steubenville, and Wheeling use annually from 75,000 to 100,000 tons of glass sand. Not only would freight augment from this consumption of sand, but also from the use of the rock itself for furnace purposes. A superior flagstone for pavements in inexhaustible quantities is also in close proximity to the river. A market for these flags would, under cheap water carriage, be open in all the river cities, and foreshadows another probable item in the tonnage of the river. There are also great quantities of so called "Belgium block-stone" for street pavements, and superior building stone

as well. These also are presumable items in the future river commerce of the stream, but are almost nullities in swelling the commerce of the nation under costly railway carriage, which they cannot sustain. Salt, another heavy article which illy bears the cost of railway carriage, is produced to a considerable extent along this river, and would be largely manufactured under the facilities of reaching the markets of the West by water carriage.

The upper waters of the river are well timbered with oak, hickory, white and black chestnut, locust, maple, beech, cherry, and some pine, and the products of these forests are proper items to be considered as part of the future river commerce of the Youghiogheny. By the cost of railway freights, the timber of this stream, like the stone, is almost altogether barred out of the commerce of the country, although to some extent staves are manufactured, and considerable tanbark shipped by rail.

In the development of the resources of the Youghiogheny the great water power of Ohio Pyle Falls, some 8 miles above Connellsville, is also to be considered. These falls were some fifty-five years ago selected by a commission of United States Engineers as the site of a national armory. In a distance of 700 feet there is a fall of 87 feet, and considering its proximity to great supplies of timber and marble, it is not unlikely, under slackwater improvements of the river, to become an active manufacturing point, which probability it is proper to entertain in this prospective estimate of the future river commerce of this stream.

In fact the possible transportation arising out of the probability of the Youghiogheny Valley being a dense manufacturing district, from the great facilities for manufacturing afforded by the fuel and materials so lavishly deposited along the whole course of the river, is proper to be considered in any prospective estimate tending to answer your inquiry as to what would be the future river commerce of the Youghiogheny if slackwatered, as is also the great local transportation for short distances on the 83 miles of river thus improved, under the wants of a dense population in that case there concentrated.

While, therefore, the present river commerce of the Youghiogheny is of limited amount, and can be shown by actual statistics, yet the future commerce cannot be presented in statistical tables, depending as it does on prospective transportation to be created by slackwater facilities. That by reason of such facilities the commerce of the river would be great allows of but little doubt, under the showing of the materials that await cheap transportation along its course, and need but such carriage to quickly create an immense commerce How large, however, that commerce may be in millions of dollars is, of course, impossible to state, until the improvement of the navigation of the river shall open the ready and wide-spread markets of the West to the products of the Youghiogheny Valley.

Although, therefore, the future commerce of the river is not to be expressed now by figures in set statistical tables, and is therefore an unknown quantity, yet to the solving of that algebraic equation we have already stated factors of well-known power.

1. We have a present consumption in river towns, of coke made along and in the vicinity of the river, of 1,250,000 tons yearly, which, under water carriage, could be delivered to consumers at less than half the present cost of freight, and which would take river carriage in place of the rail transportation it is now compelled to use. There is also the fact that 3,000,000 tons of coal are moved yearly out of the Monongahela River, and the preference is decided that the coal of the Youghiogheny has in the market over any other coal.

2. We have the fact that the peculiar deposit of coal from which the coke is made contains in itself alone 768,000,000 tons. The output of the Monongahela district now is about, as before stated, 3,000,000 tons, indicating that for two centuries at least this coke seam, alone, would furnish a transportation of 3,000,000 tons a year at the rate of the present drain on the Monongahela coal beds. Supplementary to this store-house of coal to be shipped from, we have in the Pittsburgh seam, in an area of but 5 miles on either side of the river, 2,124,800,000 tons of the best quality of gas and fuel coal, while geographically estimated there is in the workable coal seams of the same area of 83 miles of the Youghiogheny course 14,873,600,000 tons.

3. We have the fact that the valley of the Youghiogheny abounds in iron ores, and that there are a number of furnaces already in operation therein, while the proximity of coal, ore, and limestone give unusual facilities for the production of metal, of which some 25,000 tons were transported to Pittsburgh from the Youghiogheny region by the Baltimore and Ohio Railroad during 1880, while the consumption of 300,000 tons of foreign iron material, brought to Pittsburgh in 1879–'80 by rail from the east, which would probably come by way of the Youghiogheny if slackwatered, via Baltimore and the Chesapeake and Ohio Canal, is another comparative factor.

4. We have the immense deposits of limestone and sandstone, of paving-flags and paving-stones, of the first of which the furnaces of Pittsburgh, alone, would annually consume 400,000 tons, and of the product of the sandstone the glass-houses of the same vicinage 75,000 to 100,000 tons a year.

5. There are the heavy forests of timber, which need but water carriage to come into market in various shapes.

6. There are large amounts of agricultural products raised along the course of the river, the farming lands adjacent being productive, the Baltimore and Ohio Railroad the present year transporting to the Pittsburgh markets over 3,000 tons thereof.

7. There is the manufacturing interest of the entire valley, embracing at this day the products of salt, fire-brick, of which latter, heavy as are railroad freights, the Baltimore and Ohio Railroad carried over 3,000 tons in 1880 to Pittsburgh, also paper, whisky, pig metal, of which from 60,000 to 70,000 tons are now with the present furnaces made, and a long schedule of other products of secondary character, of which the census returns of 1880 could alone give the actual figures.

8. That the transportation statistics of the Baltimore and Ohio Railroad for 1880 show nearly 2,000,000 tons of the chief ten or twelve products of the valley, carried from that region to Pittsburgh, which, under the slack water facilities of the Youghiogheny would naturally find carriage by water; and that of $2,238,000 of the revenues of the Pittsburgh division of the Baltimore and Ohio Railroad in 1880, $815,000 were from freights on coal and coke alone, 107,000 cars loaded with coal and coke having been brought to Pittsburgh alone.

While the value of these several units of calculation of the future river commerce of the Youghiogheny are of themselves dependent on the future development of that commerce to obtain their full statistical importance, yet from them, so far as present actual consumptions are defined, and transportations arrived at, and the carriage of similar materials under like conditions compared, enough is statistically presented to show over 5,000,000 tons of transportation which may be reported as a part of the future river commerce of the Youghiogheny if slackwatered, while the deductions from the others on known commercial principles forecast the future existence of an immense commerce, arising from the development of the natural resources of the Youghiogheny under cheap water carriage, through the slackwatering of the river.

And, lastly, the great and growing question of an interior water highway from the West and Southwest to the East, of which, as before stated, the Mississippi, the Ohio, and the Youghiogheny are the three western links in the chain of a continuous water communication with the waters of the Chesapeake Bay. This factor, although the last named, is not to be considered the least in estimating the future river commerce of the Youghiogheny.

While admitting the full value of the railways in all that may be claimed for them as assisting the commerce of the country, it is foreshadowed that even railways with all their facilities will be unable to meet as promptly as will be required the transportation wants of the country if the present ratios of growth continue.

In submitting this report on the present commerce of the Youghiogheny and its future if slackwatered, such leading facts only are presented that tend to show that cheap transportation is alone needed to develop a great commerce in the commodities of the Youghiogheny Valley; that along its course the materials abound from which a great commerce is naturally developed; that several of those materials are national in the demand for them, and that cheapening of their cost of transportation spreads national benefits; and that its geographical position, in event of an international water highway being created, is such that it must be a portion thereof, and consequently have its commerce arising from its natural resources largely increased by international transportation.

While unable to submit in precise statistical tables the sum of the future river commerce of the Youghiogheny, because no figures of actual results in the future could be given, yet in the belief that such facts have herein been grouped and such actual statistics given as will leave unquestioned the deduction that the future river commerce of the Youghiogheny, when that river is slackwatered, will be of such great magnitude as will fully justify the expenditure required, this report is respectfully submitted by,

Most respectfully, your obedient servant,

GEO. H. THURSTON.

Col. W. E. MERRILL.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. No. 21.

DES MOINES RAPIDS CANAL.

LETTER

FROM

THE SECRETARY OF WAR,

RELATIVE

To the maintenance of the Des Moines Rapids Canal.

JANUARY 6, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 4, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from Captain Amos Stickney, Corps of Engineers, dated the 21st ultimo, submitting recommendation relative to the provision to be made for the cost of operating and maintenance of the Des Moines Rapids Canal, and the establishment of dry-docks in connection with the canal, &c.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

UNITED STATES ENGINEER OFFICE,
Keokuk, Iowa, December 21, 1880.

To the CHIEF OF ENGINEERS, U. S. A.:

GENERAL: I have the honor to submit a recommendation concerning the provision to be made for cost of operating and maintenance of the Des Moines Rapids Canal.

Provision for this cost has heretofore been made by annual appropriations of specified sums which have generally been sufficient, though the last appropriation of $30,000 was a reduction of $10,000 from the estimate, which necessitates the postponement of some needed dredging. In my last annual report I estimated the cost of operating and maintainingfor the fiscal year ending June 30, 1882, at $40,000; but, in view of

the uncertainties of the annual Congressional appropriations and of the liability of works of this character to costly accidents, it appears to me that more certain provision should be made, similar to that for the Louisville and Portland Canal. Thirty thousand dollars per annum will, I think, ordniarily be sufficient after the above-mentioned dredging has been thoroughly done; but, to provide for contingencies, I would recommend that no specified sum be appropriated, but that Congress be asked to authorize the Secretary of War to draw from the Treasury from time to time and expend such sums as may be necessary for the proper operating and maintenance of the canal. By this method the cost to the government would be no greater, and proper provision would be assured.

By invitation of their president, General Gillmore, I brought this matter to the attention of the Mississippi River Commission, and they appeared to concur in the propriety and advisability of my recommendation. I also brought to the attention of the commission the facts relating to the establishment of dry-docks in connection with the canal. As you will remember, a Board of Engineer officers assembled at this place May 13, 1879, to consider the subject of dry-docks and other matters connected with the canal. I have not seen a copy of the report of the Board, but I understand that they reported adversely to the establishment of dry-docks as a private enterprise, though considering it favorably as a public work. I am informed that Mr. McCoid, the Representative from this district, proposes to bring the matter before Congress with a view to having dry-docks constructed by the government, and, as I understand, operated in connection with the canal. I see no objection to this, and think it would be of great benefit to the commerce of the upper river. It will not interfere at all with the operating of the canal, provided that the work always remains in charge of the officer who has charge of the canal, and this, I think, should be insisted upon to the extent of making such works appurtenances of the canal.

Very respectfully, your obedient servant,

AMOS STICKNEY,
Captain of Engineers.

[First indorsement.]

OFFICE CHIEF OF ENGINEERS, U. S. A.,
December 29, 1880.

Copy respectfully submitted to the honorable the Secretary of War with recommendation that it be transmitted to the Speaker of the House of Representatives for the information of the Committee on Commerce.

H. G. WRIGHT,
Chief of Engineers, Brigadier and Brevet Major-General.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 22.

SNAKE, UPPER RED, AND MINNESOTA RIVERS, MINNESOTA; RESERVOIRS AT SOURCES OF ROCK RIVER, WISCONSIN AND ILLINOIS.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Surveys of Snake, Upper Red, and Minnesota Rivers, Minnesota; reservoirs at sources of Rock River, Wisconsin and Illinois.

JANUARY 8, 1881.—Read twice, referred to the Committee on Commerce, and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 6, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, of to-day's date, and accompanying copies of reports from Capt. C. J. Allen, Corps of Engineers, upon examinations and surveys, made in compliance with the provisions of the river and harbor act of June 14, 1880, of Snake River, in Minnesota; Upper Red River of the North, between Fargo, Dakota, and Breckinridge, Minnesota; Minnesota River, near the village of Belle Plain, and for reservoirs at the sources of Rock River, in Wisconsin and Illinois.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 6, 1881.

SIR: To comply with requirements of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Capt. C. J. Allen, Corps of Engineers, of the results of examinations and surveys made under his direction with the view to improvement at the following localities, viz:

1. Snake River, in Minnesota.

2. Upper Red River of the North, between Fargo, Dakota, and Breckinridge, Minnesota.
3. Minnesota River, near the village of Belle Plain.
4. For reservoirs at the sources of Rock River, in Wisconsin and Illinois.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY OF SNAKE RIVER, MINNESOTA.

ENGINEER OFFICE, UNITED STATES ARMY,
Saint Paul, Minn., December 28, 1880.

GENERAL: I have the honor to render the following report upon the survey of the Snake River, in Minnesota, made in pursuance of section 2, river and harbor act of Congress approved June 14, 1880.

The charge of the survey was intrusted to Assistant Engineer Frederick Terry, who commenced on the 11th of August and completed it by the 5th of October following.

The survey commenced at what is known as the Chengwatana Dam, about 2 miles below Pine City, and was carried up to Brunswick, a distance of about 20 miles. A gauge-rod was set at Chengwatana, its zero placed at the level of the floor of the most southerly sluice of the dam existing at this point, a dam built for the purpose of running logs into the Saint Croix, which latter stream receives the volume of the Snake River about 9 miles below Chengwatana.

The Snake River, for the 9 miles just mentioned, is a rapid torrent rushing between steep banks and entirely unsusceptible of navigation, excepting at enormous cost of improvement, if such improvement be not totally impracticable. The fall over this 9 miles is about 130 feet.

The survey from Chengwatana to Brunswick consisted of a transit line with stadia to measure distances between banks, &c., a careful line of levels and frequent soundings, the soundings plotted without reduction to low water, the latter being a difficult plane to fix for the first 10 or 12 miles on account of the operations of various sluicing dams on the tributaries to the main river, as well as of the dam at Chengwatana, although the latter was closed as a general thing during the progress of the survey, giving a head of 3.1 to 4.9 feet.

This dam, producing above it a maximum head of about 9½ feet of water, ponds the river back for some 16 or more miles.

The closure of the gates accounts for the small slope, ascertained by levels during the survey, for 10 to 12 miles above it.

Snake River, between Pine City and Pokegama Flats, 4 miles above, had an average width of 600 feet at the time the party traversed it; the banks being low, a slight rise or fall of water surface is followed by rapid increase or diminution of width. The stream at Pokegama Flats spreads out for about 2½ miles, over a low marshy country, to a width of about a mile, through which flows a tortuous channel, but one of good depth.

Between the Flats and Brunswick, a distance of about 14 miles, the river narrows, varying about 150 feet in width; the banks being, gener-

ally, 3 to 4 feet in height, are not liable to overflow, excepting during high water, or when the head of water above the Chengwatana dam is at its maximum.

Assistant Terry reports the difference of level at low water between Millet's Rapids, 18 miles above the Chengwatana Dam, and the zero of the guage established by him, to be 12 feet; and that, when the water is raised to the full height to which the dam is capable of raising it, the slope of water surface is but 2½ feet over the entire distance.

For the first 11 miles above Pine City (at which point the Saint Paul and Duluth Railroad crosses the Snake River by means of a low bridge) there is no need of any improvement, there being at ordinarily low water a ruling depth of 3 feet in the channel. From the termination of this latter distance to Millet's Rapids, 5 miles further up stream, there is a number of bowlders of various sizes scattered through the channel, which will have to be removed if it be determined to make any improvement upon this stream. Two miles below Millet's Rapids, Rice Creek enters from the south. This creek is about 75 feet in width, and about 9 miles in length. The entrance to it, for about 1,000 feet, is of much less width than that of the creek above. During the past year parties interested in navigating the river and creek cut a small channel connecting the river and creek, but failed to make the cut of sufficient capacity, both as to width and depth.

The stage of water in the creek depends almost entirely upon that of the Snake River, to which it is tributary. For some distance above its mouth it is grown up with grass, rushes, &c.

The principal tributaries to the Snake River are the Knife, Ann, and Ground-House rivers on the right bank, and the Little Snake and Pokegama rivers on the left bank. The general course of the Snake River below Brunswick is from west to east.

The business upon the Snake River consists almost entirely in the driving of logs. But little farming is carried on, either in the vicinity of this stream or of Rice Creek. Two small steamers ply upon these streams, carrying supplies, &c.

Upon the arrival of the field party at Brunswick, it was divided; one part, under the charge of Assistant Terry, carrying the line of levels across to Mille-Lacs, in order to ascertain the elevation of its surface above the sea; the other, under charge of Mr. John Cullen, leveler, carrying the levels from the zero of the gauge of Chengwatana to the mouth of the Snake River, and thence down the Saint Croix, to connect with the bench-mark established by Assistant Terry in 1879.*

Assistant Terry submits estimates of the cost of improving Snake River and Rice Creek; but as the act of Congress simply refers to the Snake River, I have only considered his estimate for that stream, viz, for removing bowlders from the channel, $3,400. My experience teaches me, however, that this is probably too low, as a crane-boat, with strong iron grapples, would have to be provided for raising the bowlders and removing snags where necessary; also, a scow and floating accommodations and outfit for the shelter and subsistence of the workmen. I should place the cost at not less than $5,000. I will add, in connec-

* In all of our surveys we have connected our levels, as far as possible, with those of the various railroads traversing the country under examination. A discrepancy occurs in making the connection between the railroad bench-mark at Pine City and the zero of the gauge at Saint Paul. This should receive investigation at once, and, if funds warrant, it is proposed to detail a small party to run a line of levels along the Saint Paul and Duluth Railroad to connect the zero of the Saint Paul guage with that of Lake Superior at Duluth; also, to obtain the elevations of intermediate points.

tion, that I know of no public interest to be subserved by such expenditure.

I inclose herewith the report of Assistant Terry from which the information above given has been mostly obtained. Tracings from map of the survey will be forwarded as soon as completed.

Very respectfully, your obedient servant,

CHAS. J. ALLEN,
Captain of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

COMMERCIAL STATISTICS.

The Snake River is in the collection district of Minnesota. The nearest port of entry is Duluth, Minn., at which place the revenues collected for the fiscal year ending June 30, 1880, amounted to $4,964.51.

There are two small steamboats on this river: one 60 feet long, 14 feet wide, about 3 feet draught, built in 1879; the other 110 feet long, 20 feet wide, and 16 inches draught, built in 1880. These boats ply between Brunswick, Minn. (population 300), and Pine City, Minn. (population about 700), a distance of about 18 miles, though at high stage of water they can go up Rice Creek, some 16 miles from Pine City, and up Pokegama Lake about 12 miles from Pine City. In 1879 they made about twenty-five trips, carrying in all about 150 tons. The country tributary to the Snake is not densely settled, there being only about 4,500 people within a radius of 20 miles, so that the carrying trade at present is comparatively light and consequently not a profitable business.

It is claimed that in case the necessary improvements are made steamboating will be a great convenience and benefit to the settlers by putting them in direct communication with the railroad, thus affording them a market for their products and facilities for getting their hard wood and timber to market and obtaining their supplies without making long journeys over poor roads.

The steamboats next season will have, probably, plenty to do in the way of towing logs, ties, piles, wood, &c. During the season of 1880 there will run down Snake River 75,000,000 of feet of logs, 4,000 railroad ties, and 100,000 linear feet of piles, valued at $530,000. It is expected that a larger quantity than the above will be run down in 1881.

REPORT OF MR. FREDERICK TERRY, ASSISTANT ENGINEER.

ENGINEER OFFICE, UNITED STATES ARMY,
Saint Paul, Minn., December 27, 1880.

SIR: I respectfully submit the following report of the survey of a portion of the Snake River during the past season:

In obedience to your instructions, I left Saint Paul on August 10 and proceeded to Pine City, Minn. I commenced the survey at Chengwatana Dam, about 2 miles below Pine City, and carried it up to Brunswick, a distance of about 20 miles. This work was completed on September 7.

The party was then divided into two leveling parties; one party, under Mr. John Cullen, carrying the levels from Chengwatana Dam down Snake River to the Saint Croix River, thence down the Saint Croix River to Taylor's Falls, connecting at that point with the levels that were carried from Taylor's Falls to Prescott in 1879; the other party, under my personal charge, carried the levels from a bench-mark on the Snake River about 1½ miles below the mouth of Knife River to Mille-Lacs. The bench-mark from which I started was established by Mr. Vine D. Simar, assistant engineer, in 1879, by a line of levels from Grass Lake. I had, during the progress of the detailed survey of Snake River, connected the bench-mark at Grass Lake with a bench-mark at Chengwatana Dam, so that on the completion of the work of the two leveling parties, which was accomplished on October 5, the water surface of Mille-Lacs was connected with the levels of the Mississippi River system. I give below a table showing the heights of points, assuming Lake Superior to be 602 feet, and the zero of the Saint Paul gauge to be 678 feet above sea-level:

	Feet.
Zero of gauge at Taylor's Falls	679.158
Low water, mouth of Snake River	791.769
Bottom of sluice-gate, Chengwatana Dam	924.027
Water surface, Mille-Lacs	1,246.179

I found high water marks on trees at Mille-Lacs, which make the high water of 1880 1,248.719 feet above sea-level. This is probably as high as the water has been for a number of years, and, from information derived there, I should judge the low water of 1878 to have been 2½ feet below the stage I found the lake at; this would give a range of about 5 feet between high and low water.

Snake River, between Pine City and Pokegama Flats, a distance of 4 miles, averages about 600 feet in width at the stage of water during which the survey was made, namely, about 4 feet; but, as the banks are low, the width changes very much with the rise and fall of the water. At Pokegama Flats the river, for about 2½ miles, spreads out over a low, marshy country to a width of about 1 mile, through which winds a very crooked channel of good depth. Between the flats and Brunswick, a distance of about 13½ miles, the river becomes much narrower, averaging about 150 feet in width, and, as the banks are generally 3 or 4 feet in height, the width does not vary, except during the spring rise.

The stage of water in the river is controlled, in great part, by a system of dams erected by the lumbermen on the Snake and its tributaries. The largest of these is the Chengwatana Dam, which is built across the Snake River, 1½ miles below Pine City, and is capable of retaining a head of 9½ feet. The slope of the river at low water, assuming the bottom of the sluice-gates at Chengwatana Dam as low-water, is 12 feet from the foot of Millet's Rapids down to the dam; with a full head on the dam, the slope would be 2½ feet. The dams on the Snake River and its tributaries are opened in the spring, and generally remain open until late in the autumn, with the exception of Chengwatana Dam, which remains closed during most of the year; this management of the dams is the best that can be devised for the navigable portion of the river.

In proceeding up the river from Pine City, for the first 13 miles there is no need of any work being done, as there is during the ordinary stage of water a depth of at least 3 feet in the channel. From this point to Millet's Rapids, a distance of 5 miles, there is a large number of bowlders scattered through the channel which will have to be removed to make navigation safe. Two miles below Millet's Rapids, Rice Creek enters from the south. This creek is about 75 feet in width, and about 9 miles in length. It has a very narrow entrance, but about 1,000 feet above its mouth it widens out, and also turns to the north until it approaches within about 40 feet of the Snake River. During the past season parties interested in the steamboats on the river cut a channel across the narrow neck of land separating the two streams, which would have made a better entrance if it had been taken out deep enough, but it needs to be deepened 2 feet. For the first ½ mile above the "cut-off" the creek is full of grass, and will have to be cleaned out before it can become navigable at the usual stage of the river. The slope of Rice Creek is so very slight that there is no perceptible current, and its stage of water is almost entirely dependent upon the back water from Snake River. With the improvements I have suggested, and the usual head of water on Chengwatana Dam, I think Rice Creek could be made navigable for small boats drawing not over 3 feet of water for a distance of 5 miles, thus giving access to a farming region that has no present outlet except by wagon.

I give below an estimate of the probable expense of improving Snake River and Rice Creek, and would state at the same time that I can see no reason for making the expenditure, as there is at present no business on the river that would make the running of boats profitable, and there will not be until the country becomes more thickly settled.

For removing bowlders from the channel of Snake River	$3,400
For deepening the entrance to Rice Creek, removing rushes, &c	1,600
Total	5,000

Very respectfully, your obedient servant,

FREDERICK TERRY,
Assistant Engineer.

Capt. CHARLES J. ALLEN,
Corps of Engineers, U. S. A.

Table showing approximate distances of points on the Saint Croix and Snake Rivers.

Points.	Distance between points.	Distance from Taylor's Falls.
ON THE SAINT CROIX.		
Rock Creek	3	3
Rush City Ferry	21	24
Mouth of Snake River	12	36
ON THE SNAKE RIVER.		
Chengwatana Dam	9	45
Pine City	2	47
Greely Farm	9	56
Rice Creek	5	61
Brunswick	4	65

Table showing approximate heights of points on the Saint Croix and Snake Rivers reduced to sea-level.

There is a discrepancy of 5 feet in making the connection between the railroad bench-mark at Pine City and the zero of the gauge at Saint Paul; this is probably due to an error in the railroad-levels, and I would suggest that the matter be investigated by running a level-line from Duluth to Pine City.

Rock Creek*	720, 907	Water surface; low-water.
Rush City Ferry	763, 731	Do.
Mouth of Snake River	791, 769	Do.
Chengwatana Dam	924, 027	Sluice gate; low-water bottom.
Greely Farm	924, 669	Water surface; low-water.

EXAMINATION OF UPPER RED RIVER OF THE NORTH, BETWEEN FARGO, DAKOTA, AND BRECKINRIDGE, MINNESOTA.

ENGINEER OFFICE, UNITED STATES ARMY,
Saint Paul, Minn., December 31, 1880.

GENERAL: I have the honor to render the following report upon the examination of the Red River of the North, between Fargo, Dak. (Moorhead, Minn., is on the right bank and directly opposite), and Breckinridge, Minn., in accordance with the requirements of section 2, river and harbor act, approved June 14, 1880.

The examination was intrusted to Mr. Charles Wanzer, assistant engineer, in local charge of the work of improvement upon the Red River. He took the field, with a small party, on the 14th of September last, and completed the field-work on the 9th of October following. The examination consisted of channel and cross-section soundings for the entire distance, and a check line of levels for the purpose of ascertaining the slopes of the river.

This portion of the river received very complete and accurate survey in 1874, by Major Farquhar, Corps of Engineers, the maps of which are on file in this office.

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*Rock Creek is at the head of the rapids, about 3 miles above Taylor's Falls, and 2 miles above the United States bench-mark established at the commencement of the survey of the Saint Croix River in 1879.

The principal aim of the examination this past season was to ascertain whether or not changes of any importance had occurred in the bed of the stream since 1874. The stages of water in 1874 and 1880 not being exactly the same, an exact concordance between slopes and channel distances for those years could not be expected; yet the difference was found to be so slight that the examination last season is practically a confirmation of the correctness of the survey of 1874.

Assistant Wanzer reports:

In accordance with your instructions, I started on September 14 to make an examination of this portion of the river. The examination consisted of channel and cross-section soundings for the entire distance, and a check line of levels for the purpose of ascertaining the river slopes. From Breckinridge (the junction of the Otter Tail and Bois de Sioux Rivers) to old Fort Abercrombie—a distance, by river, of 26 miles—the slope or fall of the surface of the stream is 35.542 feet, or an average slope per mile of 1.36 feet, with one stretch included of 1.3 miles with an average slope of 2.86 feet per mile. This latter slope is over what is known as Conolly's Rapids. The river for the entire 26 miles is about 200 feet wide, and for a greater portion of the distance the river bed is formed of gravel, mixed with frequent bowlders, some of which have cubical contents of 5 yards. Soundings show, in eleven different stretches of river, a low-water channel of less than 1 foot. These are not isolated soundings, but continue for distances of from 1 to 500 feet, and even for these depths of channel are very narrow and tortuous and completely hemmed in by large bowlders. No improvements can reasonably be made over this entire portion of the river, without furnishing slack-water navigation by means of locks and dams. As there seems to be no commercial demand for any such extensive improvements as would be required, I have made no estimates of their cost. Fort Abercrombie should be considered the head of navigation on the Red River of the North; the portion of river between that point and Breckinridge being possible for navigation for a few days only, in the year, during the period of extreme high water.

From Fort Abercrombie to Fargo, the distance, by river, is 75.6 miles, with an average slope per mile of a little over 0.5 of a foot. During the winter of 1879 and 1880 a party, under your authority, cut down the overhanging trees and removed all snags which were to be found, while the river was frozen. The work was well done as far as it was possible to do, but during the period of open river and low water a considerable number of dangerous snags are still to be seen, and should be removed. This work could be done during the first low water period of the coming season.

The river, from Fort Abercrombie to Fargo, is naturally superior for navigable purposes to that part of the stream from Fargo to the mouth of the Cheyenne River, 20 miles below Fargo, and very little work will be required to perfect it. To within 6 miles of Fargo nothing is required but the removal of snags, but over the latter 6 miles mentioned about 40,000 yards of earth will have to be removed by dredging. The removal of snags is by far the more needed improvement at present, and should, if possible, be accomplished first. It is anticipated that a regular line of boats will run over this portion of the river during the coming season for the purpose of carrying wheat to the two railways now touching the river at Fargo.

* * * * * * *

Gaugings of the upper river 19 miles above Moorhead (just below the mouth of the Wild Rice River) show the discharge, on September 9, to be 895.42 cubic feet; low-water discharge to be 465.9 cubic feet per second. The total cost of the examination was $333, and was completed October 9, 1880.

* * * * * * *

The river was open and free of ice for a period of 214 days in 1880.

It will be seen from the above that Assistant Wanzer does not consider the stretch of 26 miles of river between Breckinridge and Fort Abercrombie (the former at the junction of the Otter Tail and Bois de Sioux Rivers) as susceptible of thorough improvement at low-water stage, excepting at great expense, the low-water slope of the stream between the points named being at the time of the survey 35.5 feet, or an average of 1.36 feet to the mile, and the bed of the river composed mostly of gravel and granite bowlders, some of the latter having contents of five cubic yards. The water upon the principal shoal, within this stretch of river, known as Conolly's Rapids, has an average slope of 2.86 feet for a distance of 1.3 miles. There is little commerce between Breckinridge and Fort Abercrombie. Light-draught flats and barges

are built at Breckinridge and floated down, unloaded, to Abercrombie, Fargo, and other points, where they are used for the transportation of wheat, &c.

Between Fort Abercrombie and Fargo, a distance of 75.6 miles, by river, the slope, per mile, averages a little more than half a foot.

During the winter of 1879 and 1880 a number of snags and leaning trees were removed from the river, between the two last-named points, the party moving on the ice. The cost of this work was about $3,000. This secured a safe high water channel, but a number of dangerous snags which could not be discovered through the ice still remain. These and a number still of overhanging trees should be removed, in order to render the stream, at low water, navigable. The result of the winter's work was apparent last season, when about 120,000 bushels of wheat were boated down the stream to Fargo. To within 6 miles of Fargo nothing further than the removal of snags and trees seems to be needed, but over the last-mentioned stretch (6 miles) about 40,000 cubic yards of material require removal by dredging. The United States dredge, during the past season, excavated and removed the tough clay of the river bed, at a cost of $12\frac{2}{5}$ cents per cubic yard.

As the cost of operating the dredge may increase during the next year or two, on account of increase in price of labor and fuel, the cost of dredging and removal of the spoil may be set at about 16 cents per yard, or $6,400 for the dredging.

The Northern Pacific Railroad bridge, crossing the Red River from Moorhead to Fargo, completely bars the ascent of steamers, it being unprovided with a draw, its lower chord about 14 inches above extreme high water, and about 29 feet above extreme low water. During high-water it is a bar even to the passage of flats and barges.

A wagon bridge, built upon light trestles, also spans the river a few feet below the railroad bridge. In order to move the United States dredge to the point requiring excavation above Fargo, a portion of the wagon bridge would have to be removed and replaced; this, however, could be done at little expense. But, in order to pass the railroad bridge at any stage of water, the "A" braces and cross-braces of the dredge—the former of which rise to a height of about 48 feet above the deck, or about 52 feet above the water surface—must be taken down. After passing the bridge the braces and boom would have to be set up again. Upon completion of the dredging, which would require the dredge to work to its full capacity for an entire working season, the operation of removal and replacing would have to be repeated. The cost of such, if no accident should occur in lowering and raising such heavy framings of timber, would not exceed, probably, a few hundreds of dollars; but there remains the risk of accident. The question arises whether the United States Government should not require the railroad bridge to be provided with a draw, as are all the bridges spanning the Red River below this point.

It would not be advisable to withdraw the United States dredge from its present work below Fargo for at least another season; although this would depend upon the stage of water during the late summer and the fall months. Major Farquhar rendered an estimate for the improvement of the stretch of river under consideration, in his report to the Chief of Engineers February 8, 1875. The cost he placed at $22,663.98, including 10 per cent. for contingencies. This estimate is believed to be about correct. In my annual report for the fiscal year ending June 30, 1880, I estimated $10,000 as the sum that could be profitably ex-

pended above Fargo during the fiscal year ending June 30, 1882, and the results of the examination confirm the correctness of that estimate.

The surface of water was about 1 foot above low water during the time of the examination.

Very respectfully, your obedient servant,

CHAS. J. ALLEN,
Captain of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

Table of slopes and distances, by river, from Breckinridge to Fargo.

From Breckinridge to—	Fall between stations.	Total fall.	Distances between stations.	Total distance from Breckinridge.	Slope per mile between stations.
	Feet.	*Feet.*	*Miles.*	*Miles.*	*Feet.*
Woodson's	2.421	2.421	2.42	2.42	1.00
Island No. 5	2.790	5.211	2.57	4.99	1.08
Head of rapids	4.653	9.864	3.93	8.92	1.18
Foot of rapids	3.727	13.591	1.30	10.22	2.86
Baumers	8.537	22.128	5.68	15.90	1.50
First United States reservation post	4.588	26.716	3.25	19.15	1.41
Fort Abercrombie	8.826	35.542	6.82	25.97	1.29
Second United States reservation post	6.119	41.661	6.60	32.57	0.927
Uhlan's Bend	6.829	48.490	9.60	42.17	0.71
Ole Hicks	16.313	64.803	27.10	69.27	0.602
Mouth of Rice River	5.863	70.666	13.20	82.47	0.444
Fargo	5.733	76.399	19.10	101.57	0.3

COMMERCIAL STATISTICS.

The Red River of the North is in the collection district of Minnesota, of which Pembina is the port of entry. The district of Minnesota, however, embraces all of the State of Minnesota (except the waters of Lake Superior) and all of Dakota Territory; with deputy collectors at Saint Paul, and Saint Vincent, Minn., and Bismarck, Dak. The amount of revenue (duties and fees) collected at Pembina and Saint Vincent during the fiscal year ending June 30, 1880, was $16,554.35.

Commerce of the Red River of the North between Abercrombie, Dak. (just below Breckinridge, Minn.), and Fargo, Dak., for 1880: Shipped from Abercrombie to Fargo, by steamboat and barges, 1,529,220 pounds wheat; by flat-boats and rafts, 7,200,000 pounds wood; total, 8,729,220.

Considering the scant shipping facilities, the above amount is not regarded as small and represents but a portion of the business that may be expected in case the river is cleared of snags and other obstructions sufficiently to warrant the risk of placing additional steamboats and barges upon it. Yet, it is stated upon good authority that a new line of boats will be put on next season to ply between the points named to carry wheat to the railroad, there being at present 250,000 bushels directly tributary to the river between Breckinridge and Fargo. Wheat-raising and general farming is the principal interest in the Red River Valley.

Railroads cross the river at Breckinridge, Moorhead, and Grand Forks.

EXAMINATION OF MINNESOTA RIVER NEAR THE VILLAGE OF BELLE PLAIN, MINNESOTA.

ENGINEER OFFICE, UNITED STATES ARMY,
Saint Paul, Minn., December 23, 1880.

GENERAL: I have the honor to render the following report upon the examination of the narrow neck of land opposite the village of Belle Plain, upon the Minnesota River, made in accordance with the require-

ments of section 2, river and harbor act of Congress approved June 14, 1880, the pertaining paragraph reading as follows:

Minnesota River, near the village of Belle Plain, with a view to prevent the breaking away of the banks of the narrow neck of land opposite said village, and injury to the navigation of said river in Minnesota.

The examination was made by Assistant Frederick Terry during the latter part of October.

Belle Plain is a village of about 750 inhabitants, situated upon the left bank of the Minnesota River.

In 1879 the citizens built a wagon bridge, with a draw, across the river, at a cost of about $20,000. The bridge is useful, probably as much to the farmers of the vicinity as to the citizens of Belle Plain. The road leading from the north end of the bridge passes through a narrow neck of land—(please see sketch herewith)—where the least width between banks is about 200 feet. This neck, Assistant Terry reports, is cutting away, on the right bank, at the rate of about 5 feet a year, the erosion having progressed to within about 30 feet of the wagon road. The fear upon the part of those interested in the preservation of this approach to the bridge seems to be that the stream may break through the neck of land and leave the bridge abutting upon an island.

Assistant Terry presents two plans, with estimates of the cost, of protecting 900 linear feet of bank in the bend.

The first contemplates carrying the protection up to the top of the bank, which is about 25 feet above low water. The cost he places at $9,900.

The second plan proposed by him is to carry the protection up to 10 feet above low water. The cost he places at $5,000.

I inclose herewith the report of Assistant Terry; also, sketch of the locality.

The Minnesota River is not navigated above Carver—the latter about 19 miles below Belle Plain; and below Carver the navigation practically amounts to nothing.

Very respectfully, your obedient servant,

CHAS. J. ALLEN,
Captain of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

STATISTICS.

Belle Plain is in the collection district of Minnesota. The nearest port of entry is Duluth, Minn., at which place the revenues collected during the fiscal year ending June 30, 1880, amounted to $4,964.51. There are no commercial statistics to report.

The commerce of the river, even before the advent of the railroad through the Minnesota River Valley, was not large in any one season, and since that time only an occasional small wild packet has ascended the river.

In May, 1876, two steamboats that went up the river during high-water had to discharge their return freight at Mankato before they could return to the Mississippi River, owing to the great number of snags and other obstructions.

REPORT OF MR. FREDERICK TERRY, ASSISTANT ENGINEER.

ENGINEER OFFICE UNITED STATES ARMY,
Saint Paul, Minn., November 22, 1880.

SIR: I respectfully submit the following report of the condition and estimated cost of protecting the neck of land between the bends of the Minnesota River, opposite Belle Plain, Minn.

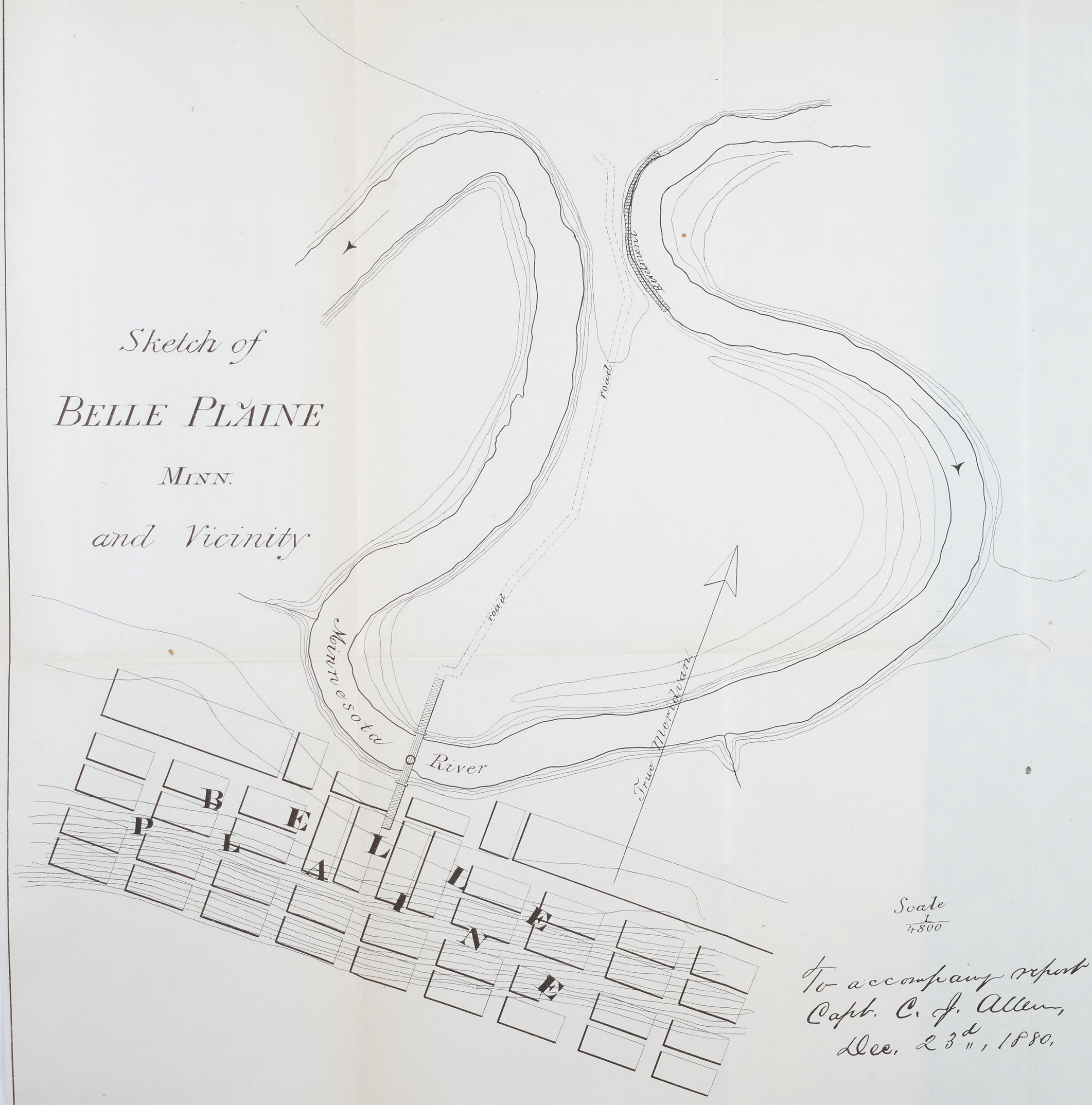
Belle Plain is a borough of about 750 inhabitants and is the market town of quite a large farming country.

Sketch of

BELLE PLAINE

MINN.

and Vicinity



Scale 1/4800

To accompany report of Capt. C. J. Allen, Dec. 23d, 1880.

House Ex. Doc. No 22, 3rd Sess. 46th Cong.

In 1879 the borough built a draw-bridge across the river, at an expense of $20,000.

The road leading from the north end of this bridge crosses a narrow neck of land, between two bends of the river. This neck is cutting away on the upper side at the rate of about 5 feet a year, and now the bank is within 30 feet of the road, and in course of time will undoubtedly cut entirely across the neck, and this cut would then become the main channel of the river. To prevent further cutting I have estimated for revetting the upper side of the neck for a distance of 900 feet.

On account of the height of the bank (averaging 25 feet) and the distance that rock would have to be hauled (6 miles), the work will cost about $11 a linear foot, making the cost of the whole work $9,900.

This estimate is based on the plan of revetting the bank to the top, which I do not consider absolutely necessary.

I think, if the revetment was carried up to 10 feet above low-water, and the entire bank taken off to a slope of 1 to 1, that no further cutting would take place at this point.

I estimate the cost of this last plan at $5,000.

Very respectfully, your obedient servant,

FREDERICK TERRY,
Assistant Engineer.

Capt. CHAS. J. ALLEN,
Corps of Engineers, U. S A.

EXAMINATION OF ROCK RIVER, WISCONSIN AND ILLINOIS, WITH A VIEW TO ESTABLISHING THE RESERVOIR SYSTEM UPON THAT RIVER.

ENGINEER OFFICE, UNITED STATES ARMY,
Saint Paul, Minn., December 23, 1880.

GENERAL: I have the honor to render the following report upon the examination of the Rock River, in Wisconsin and Illinois, made in pursuance of the paragraph in section 2, act of Congress approved June 14, 1880, said paragraph reading as follows:

> Of the sum of one hundred and fifty thousand dollars herein appropriated for surveys and examinations, the sum of fifteen thousand dollars may be expended in the completion of the survey of the reservoir system on the headwaters of the Mississippi River, including Rock River, in Wisconsin and Illinois.

The examination was made during the month of September last by Mr. J. P. Frizell, assistant engineer, who examined the ground sufficiently, gaining at the same time all information possible from reliable sources. His examination was so satisfactory as to results that a full survey was not deemed necessary.

The uppermost point at which a reservoir has been suggested upon the riveris near the village of Horicon, at the outlet of what was once a lake, caused by the construction of a dam 9½ feet high at its outlet in 1842. It was, previous to the construction of that dam, a vast marsh. The lake lies mostly in Dodge and Fond du Lac Counties, and has a watershed of about 491 square miles. This dam flowed, it is said, about 60 square miles of ground. This overflow caused extensive suits for land damages, amounting to about $150,000, a sum that the owners of the mill privileges, &c., were unable to pay, judgment having been rendered against them. In 1868 the dam was removed by order of the court. Consequently the area has nearly, if not quite, resumed its original condition. The cost of a dam to recreate the lake, or reservoir, to raise the water, say 10 feet, would be about $15,000. The land damages, however, as estimated by Assistant Frizell, could not be less than from $200,000 to $300,000.

The average annual precipitation at Milwaukee, for a period of eight years, has been calculated as 35.33 inches. If we assume, as does As-

sistant Frizell, that 40 per cent. of this precipitation finds its way into the stream, the total amount that could be impounded for one year would be 15,056,369,331 cubic feet. But we must allow for evaporation from the surface of the reservoir; assuming such to be about $\frac{1}{4}$ of an inch per day for seven months in the year, we have as the quantity that can be actually impounded in the reservoir about 8,000,000,000 cubic feet for a dam raising the water surface about 10 feet. This amount impounded and concentrated into a period of one hundred days would afford, as an increment to the Rock River below, and to the Mississippi below Rock Island, about 925 cubic feet per second, which increment to the discharge of the Mississippi below Rock Island would be too small to be of benefit to the latter stream. To raise the dam at Horicon so as to afford a greater head than 10 feet would, of course, increase the reservoir capacity; it would also increase the claims for damages for overflow of land in a well settled country.

The parties in control of the reservoir prior to 1868 regarded the average cash value of the water discharged from it as $15,000 per annum. These remarks as to a dam at Lake Horicon would appear to settle the question. It only seems necessary to touch cursorily upon the river below it.

Beaver Dam Lake, in Dodge County, has an area of about 6,000 acres, and is created entirely by a dam at the village of Beaver Dam, the water having been raised about 6 feet. It is possible that the reservoir capacity could be somewhat increased by raising the dam, but not to insure any benefit thereby.

Lake Koshkonong, lying mainly in Jefferson County, is an enlargement of Rock River, its surface area covering about 30 square miles, the drainage area, or watershed, being about 2,540 square miles, including the area of watershed above it. There exists a low dam at Indian Ford, a few miles below, owned by Janesville manufacturers. A dam 20 feet in height could be constructed in this vicinity, to control the lake, but the claims for damage from overflow and flowing out mill privileges above would probably be so great as to preclude the idea of the government establishing one.

Lakes Mendota and Menona contain about 25 square miles of area, with a large drainage ground, but as their situations encircle the city of Madison the probability is that land damages from overflow would be very great.

Assistant Frizell estimates, from careful study, that above Janesville about 50,000,000 cubic feet of water might be impounded in the course of one year, and that for one hundred days about 5,700 cubic feet of water per second could possibly be drawn off to add to the low-water discharge of the Mississippi River below Rock Island. This would be no doubt of benefit to the Mississippi at time of extreme low water, but the total deprivation to the mills during the time necessary to impound such a quantity of water would not only embarrass the mill-owners, but give rise to heavy claims.

There are, at present, dams constructed across the river at many points, especially at Hustisford, Watertown, Jefferson, Indian Ford, Janesville, Beloit, Rockton, Rockford, Dixon, Sterling, and Milan; the latter near the confluence of the Rock and Mississippi rivers. Some of the mill privileges in the lower part of the river might be enhanced in value by an equable flow of water throughout the greater part of the year; others, above, might be injured.

In General Warren's report upon bridging the Mississippi River, the

MAP OF DRAINAGE AREA of the ROCK RIVER

Compiled from State Maps Nov. 1880

Scale. 1 IN = 10 MILES

To accompany report of Capt. Chas. J. Allen, Corps of Engineers U. S. A., of Dec. 23d. 1880.

House Ex. Doc. N° 22, 3rd Sess-46th Cong.

area of the watershed of the Rock River is placed at 10,690 square miles, nearly equal, in area, to the watershed of the Wisconsin River.

On account of the complications and claims that would arise from the construction, by the United States Government, of reservoirs upon the Rock River, it would seem best to leave such to private parties or corporations.

Assistant Frizell's report of November 8 is so full of interesting facts that I forward it entire.

I will add that the rendition of this report has been delayed thus far, as I had intended it to form part of the report of the season's work appertaining to the reservoir system.

A tracing of the area under consideration, scaled 1 inch to the mile, is also inclosed.

Very respectfully, your obedient servent,

CHAS. J. ALLEN,
Captain of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. JOSEPH P. FRIZELL, ASSISTANT ENGINEER.

ENGINEER OFFICE, UNITED STATES ARMY,
Saint Paul, Minn., November 8, 1880.

SIR: The act of Congress approved June 14, 1880, calls for an examination or survey of Rock River, in Wisconsin and Illinois, with reference to the construction of reservoirs thereon. I visited the river, by your orders, in September last, and examined the principal localities suitable for reservoirs. I have also gained what information I could concerning the subject from other sources, and have the honor to present the following preliminary report, embodying considerations proper to be taken account of before incurring the expense of a survey.

At the head of the river, in Dodge and Fond du Lac counties, is a vast marsh capable of being flooded by a dam at the village of Horicon, in the town of Hubbard. A dam was constructed at this point in 1842, which flowed, it is said, some 60 square miles of ground, raising the water 9½ feet at the dam. This dam stood till 1868, furnishing power to mills at Horicon, around which a considerable village grew up. In 1868 the dam was removed by order of the court, judgments having been obtained against its owners, the Merchants' Union Manufacturing Company, by land owners, which the former were unable to pay.

The drainage ground appurtenant to the Horicon reservoir is about 491 square miles. There is an exceedingly favorable site for a dam, which need not be more than 200 feet long to raise the water 10 feet. There is nothing to prevent raising the water higher than 10 feet. The cost of the dam would be comparatively slight, but the expense of land damages would be heavy, amounting probably to 2 or 300,000 dollars. We can estimate the capacity of a reservoir required here to reduce the discharge of the drainage ground. By the records of the United States Signal Service kept at Milwaukee, the total rainfall of the eight years, 1872–1879, inclusive, was 282.63 inches, being 35.33 inches per annum. We may assume that 40 per cent. of this finds it way into the reservoir, giving per annum 16,120,000,000 of cubic feet. Assume evaporation in reservoir $\frac{1}{4}$ inch per day for seven months; there must be deducted $7 \times 30 \times \frac{1}{48} \times 60 \times (5280)^2$, equal to 7,318,000,000 of cubic feet; giving for the annual product of the drainage ground 8,802,000,000 of cubic feet.

In the parliamentary inquiry relative to the East London water-works, it was stated by eminent English engineers, as a result of extensive observation, that a reservoir, to reduce the flow of its drainage ground to uniformity, should be capable of holding about eighteen months' average flow. The greatest desirable capacity of this reservoir, therefore, is $1\frac{1}{2}$ times 8,802,000,000=13,203,000,000 of cubic feet. This would require the water to be raised about 16 feet, giving an average depth of 8 feet over the whole flowage ground.

The Merchants' Union Mauufacturing Company still own the greater part of the marsh-land that would be flowed. It is assumed that this company would release the land to the United Srates in consideration of the water-power to be created by the dam.

Beaver Dam Lake, in Dodge County, covers about 6,000 acres.

It is wholly created by a dam at the village of Beaver Dam, which raises the water 6 feet. I judge that the quantity of water would warrant the raising of the dam somewhat higher, but not much. This region abounds in extensive marshes, and it is quite probable that a careful examination would disclose many localities adapted for the storage of large quantities of water.

Lake Koshkonong, lying mainly in Jefferson County, is an enlargement of Rock River, covering 25 or 30 square miles, and commanding a drainage ground of 2,542 square miles, or 2,051 square miles excluding the Horicon watershed. It is already controlled to a slight extent as a reservoir by a dam at Indian Ford, owned by the Janesville manufacturers. No physical obstacle exists to the construction of a dam 20 feet high, but it would involve very heavy damages, greatly extending the area of the lake, and flowing out mill-privileges above. It is not probable that a reservoir could be constructed here large enough to meet the requirements of the drainage ground. The total product on the above basis would be, excluding Horicon, something like 40,000,000,000 of cubic feet per annum, calling for a storage capacity of 60,000,000,000. A 20-foot dam would not probably furnish over 20,000,000,000, leaving the balance to be sought in some other part of the valley

Lakes Mendota and Menona cover some 25 square miles, and command a large drainage ground, but their situations, encircling as they do the city of Madison, probably forbid their use as reservoirs to any great extent. Judging from the general character of the country and the frequent occurrence of extended marshes, I see no reason to doubt the physical practicability of impounding the waters of Rock River above Janesville as far as may be desired, though at a very heavy expense, especially for the item of land damages.

It is worth while to consider, however, whether such an improvement would be of material benefit to the Mississippi River. General J. H. Wilson's assistants found 47,000 cubic feet per second as the ordinary low water volume of the Mississippi at Rock Island. Mr. T. C. Clark found about the same quantity for the low water volume at Quincy. General G. K. Warren found 36,100 cubic feet per second at Burlington in 1866, when the river was 1 foot above extreme low water, indicating about 32,000 at the latter stage. General Wilson found the discharge at Keokuk at ordinary low water 40,435 cubic feet per second. Assume, for purposes of discussion, that the above supposed system of reservoirs could discharge 50,000,000,000 of cubic feet per annum. Could this volume be concentrated into the ordinary period of low water, say 100 days, it would furnish for that period 5,787 cubic feet per second. This would be a considerable fraction of the volume of the river, and would have an appreciable effect upon the stage of water. It would cause a rise of about 6 inches on the Des Moines Rapids at ordinary low water. The extensive use of the Rock River for water-power, however, would prevent any such use of the reservoirs. Dams are constructed across the river and important industries established at many points on the stream, notably at Hustisford, Watertown, Jefferson, Indian Ford, Janesville, Beloit, Rockton, Rockford, Dixon, Sterling, and Rock Island. That these industries are destined to immense development in the near future we are admonished by the growth of manufacturing towns in the Eastern States, where I observed, a few weeks ago, the strange spectacle of a manufacturing establishment, originally built to be driven by water-power, having attained such dimensions that the low water volume of the stream was not sufficient to feed its boilers and wash its goods. Any extended interference by the government with the natural flow of waters on this stream would lead to endless reclamations on the part of mill owners. These industries have been established in the full faith that the usual course of nature will be maintained on this stream, and any interference therewith, to the detriment of the mills, would lead to claims for compensation. The interests of navigation on the Mississippi would dictate holding back all the water during the winter and spring, and discharging it in great volumes in the latter part of the summer and autumn. This would be directly opposed to the interests of manufacturers. A sort of compromise on this point would consist in discharging from the resorvoirs, at all times, a quantity equal to the low water volume of the stream, but what that low water volume is could never be determined to the satisfaction of all parties. The difficulty would increase as the manufactures extended. When an industry dependent on water-power attains such dimensions that it is liable to frequent interruptions from lack of water, the ordinary proceeding is to introduce a steam-engine to be run during periods of low water, depending wholly upon water-power at other times. This enables the establishment to profitably use a much larger portion of the high water volume, and restricts correspondingly the quantity of water that can be held by reservoirs. Even leaving the legal rights of the manufacturers out of consideration, it requires little argument to convince those familiar with the usual course of public affairs that reservoirs constructed on the headwaters of the Rock River would be operated in accordance with the interests of manufacturing on that river, rather than those of navigation on the Mississippi. These two interests would be identical in certain conceivable circumstances, but under any circumstances likely

to arise they would be different. Were there but one reservoir, say that at Horicon, the interests of manufacturing would require that it should be used to keep up the low water volume of the Rock River, and this use would coincide with the requirements of navigation on the Mississippi, provided low water occurred at the same time on both. It must be observed, however, that the Horicon reservoir alone would be of no appreciable benefit to the Mississippi. The above is an extreme supposition. Let us now go to the other extreme, and suppose the system of reservoirs to be sufficiently extended to impound all the water of the Rock River for a period of eighteen months, the manufactures being also supposed to have extended sufficiently to use all the water that can be obtained. Then it is plain that manufactures would require the water to be discharged at a uniform rate during the entire year, a method that would be of little use to the Mississippi, which would still demand the concentration of the discharge into the period of low-water.

There is still another case conceivable in which both interests would be identical. Imagine reservoirs to be applied to all the affluents of the Mississippi of capacity sufficient to hold the total flow for eighteen months. This would be the culmination of the reservoir system, reducing the flow of the river and all its tributaries to uniformity at all seasons. In that case a uniform discharge from all the reservoirs would exactly meet the requirements both of manufacturing and navigation. Such a system applied throughout the entire Mississippi Valley would cost not less than $1,000,000,000, and, of course, the event of its adoption is too remote to be seriously considered.

We may, however, as it appears to me, rest assured that the question of reservoirs on the Rock River will take care of itself. The manufacturing industries have already attained dimensions that require the aid of reservoirs, Lake Koshkonong, as already stated, being controlled to some extent in that interest. The necessity for these accessions will become more and more apparent as these industries expand. In the course of twenty years we shall probably see the resources of this stream taxed to their utmost with all the aid that can be derived from reservoirs. The owners of water-power on the Merrimac River, in New Hampshire and Massachusetts, control reservoirs to the extent of 200 square miles of water surface. Yet the steam-power now in use in Lowell exceeds the water power in amount. A committee of the Massachusetts legislature, some six years ago, reported that there were then over three hundred storage reservoirs in that State operated in the interest of manufacturers. To show what motives will exist for the construction of reservoirs on Rock River, let us compute the value of the Horicon reservoir, on the assumption that there is use for the increase of power derived from it. When the Horicon dam was in existence, the total fall from the surface of the Horicon reservoir to the Mississippi at Rock Island, was 333 feet. (See Survey of Rock River, Ex. Doc. No. 15, House of Representatives, 40th Congress, 1st session.) Of this fall we must reject about 75 feet as in operation, for the reason that the discharge of the reservoir, under most judicious management, will not be of full benefit to the river till it reaches a point where the latter has a considerable volume independent of the reservoir. From the remaining 258 feet we must reject that part of the fall employed in giving movement to the water. I found on the Charles River, in Massachusetts, that the aggregate fall at the several dams was about $\frac{8}{9}$ of the total fall. A similar proportion here would give 229 feet. In addition, allow 1 foot in 20 for losses in penstocks and raceways, and we have, for the total available fall, 218 feet.

We have seen that the Horicon watershed could furnish per annum, by impounding all the water, 8,802,000,000 of cubic feet; out of this there must be deducted the low-water flow, roughly estimated at 50 cubic feet per second, amounting to 1,578,000,000 of cubic feet. Balance available for increase of water-power, 6,224,000,000 of cubic feet. This would furnish during the period of low-water, assumed to last 120 days, 600 cubic feet per second flowing continuously. The numerous dams on the stream, however, would to a large extent give the means of concentrating the discharge during low-water into the working hours of the day. Fully accomplished, this would increase the discharge to over 1,200 cubic feet per second. Practically, it would not, probably, amount to over 900. The effect of the reservoir, therefore, is to add 900 cubic feet per second to the available volume of the river. It enables the mills to increase their draught by that amount without fear of interruption from low-water. For ordinary purposes it is sufficiently accurate to say that 1 cubic foot of water per second on 12 feet fall (or 12 cubic feet per second on 1 foot fall) is an effective horse-power, that is, a horse-power available for driving machinery. The effect of the reservoir therefore is to add $\frac{900 \times 218}{12}$ equal to 16,350 horse-powers to the manufacturing capacity of the stream. Water for power is leased at Minneapolis at the rate of $20 per annum per horse-power. At this rate the improvement would be worth $327,000 per annum.

The question may be approached in a more direct and simple manner. I am informed by Mr. S. Clark, who was one of the owners of the Horicon reservoir, that the cash value of the water discharged by it, on an average fall of less than 8 feet, was

$15,000 per annum. The water would have an equal value, did manufacturing require it, on each and every 8 feet of fall on the stream. The total effective fall of the entire stream from Horicon to Rock Island, estimated as above, is 280 feet, giving for the total value of the reservoir $525,000. This does not take account of the fact that the low-water volume cannot be impounded. That fact considered would reduce the value to some $400,000 per annum. Without attaching undue importance to these figures, they make it apparent that the construction of reservoirs on Rock River will in a few years be a profitable investment for private capital, and we may safely conclude that the government is under no necessity of undertaking works for whose construction by private enterprise such strong inducements are likely to arise. This stream presents in a stronger light than any hitherto considered the relation of reservoirs to water-power, and foreshadows in some degree the complications likely to spring from that relation in the application of the reservoir system. I have thought it advisable, on that account, to consider the matter more in detail than would otherwise appear necessary.

Very respectfully, your obedient servant,

JOS. P. FRIZELL,
Assistant Engineer.

Capt. CHAS. J. ALLEN,
Corps of Engineers, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 23.

SAVANNAH, EDISTO, AND SALKIEHATCHIE RIVERS.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of surveys of Savannah, Edisto, and Salkiehatchie Rivers.

JANUARY 8, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 7, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, of yesterday's date, and accompanying copies of reports from Lieut. Col. Q. A. Gillmore, Corps of Engineers, upon examinations and surveys, made in compliance with the requirements of the river and harbor act of June 14, 1880, of Savannah River, Georgia, and of Edisto and Salkiehatchie Rivers, South Carolina.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER,
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 6, 1881.

SIR: In compliance with provisions of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Lieut. Col. Q. A. Gillmore, Corps of Engineers, of the results of examinations and surveys, made under his direction, of Savannah River from Savannah to Augusta, Georgia, and of Edisto and Salkiehatchie Rivers, South Carolina, with a view to the improvement of their navigation.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

EXAMINATION AND SURVEY OF SAVANNAH RIVER, FROM SAVANNAH TO AUGUSTA, GEORGIA.

UNITED STATES ENGINEER OFFICE,
New York, December 22, 1880.

GENERAL: I have the honor to submit the following report of an examination and partial survey of the Savannah River, from Savannah to Augusta, Georgia, with preliminary estimates of cost of improvement, provided for by section 2 of the act approved June 14, 1880.

This duty was assigned to me by letter, dated June 17, 1880, and the examination was made under my direction by Mr. S. L. Fremont, assistant engineer on the Lower Savannah River improvement, whose report is herewith transmitted.

The distance between the cities of Savannah and Augusta is 108 miles in a straight line, and by water about 248 miles.

During the larger portion of the year this section of the river is navigable for steamboats drawing from 4 to 5 feet of water, but during the dry season, occurring in the latter part of summer and in autumn, the low stage of the water renders it very difficult for steamboats to reach Augusta; they usually have to discharge and receive their cargoes at some point below. Above Augusta the river trade is carried on by means of pole-boats (see report on the examinations of Savannah River above Augusta, Georgia, February 8, 1879, Appendix I 2. Annual report of the Chief of Engineers, 1879).

The obstructions to low-water navigation for vessels drawing about 4½ to 5 feet, consist chiefly of shoals or bars of sand occurring generally where the river is of undue width. There are many places with not more than from 2 to 3 feet of water over these shoals. The most serious difficulties of this description are met with near the city of Augusta, and within 30 miles from it. Lower down, as far as King's Creek, about 100 miles from Augusta, shoals occur at greater intervals, and none with less than 5 feet water over them were found between King's Creek and the city of Savannah. The aggregate length of all the shoals reported as impeding navigation is over 3 miles.

Another class of obstructions, next in importance to the shoals, is formed by snags or floating timber. They are brought into the channel by the caving of concave banks, with timber thereon, during a high or falling stage of river. They generally remain where they fall, and often form continuous rafts in the bights of bends, where they obstruct the best, frequently the only, navigable low-river waterway. The many places between Savannah and Augusta where these obstructions exist are specified in the accompanying report.

At two places pile obstructions were found. The more serious one (between Flack's and Brigham's Bars) consists of a double row of piles, driven during the late civil war. They have caused a great accumulation of drift-wood above them, and have forced the current to cut a channel around the line of piles, rendering the passage difficult.

In comparing the results of the recent examination with those recorded in the report of an examination made by Capt. J. F. Gilmer, Corps of Engineers, date June 23, 1854 (printed Ex. Doc. No. 124, 33d Congress, 1st session), it is seen that many shoals which then obstructed steamboat navigation still exist, while several others have disappeared, and some new ones have been formed in places where there was good navigation twenty-seven years ago. These facts must be taken into account when the question of improving the river is to be considered.

The banks on both sides of the stream are somewhat elevated along

the reaches, above Augusta, and for about 25 miles below that place, and the lands extending back from these banks are generally in a high state of cultivation, cotton and corn being the staple products. Lower down the banks are low, often swampy, and densely wooded.

From data furnished by railroad surveys it appears that the low-water elevation of the river at Augusta is about 130.4 feet above mean low-tide level at Savannah. The average elevation of the city of Augusta above the same sea level was found to be 154 feet. The average surface-slope of the river, at low-water, for the first 45 miles below Augusta, is from 1 to $1\frac{1}{4}$ feet per mile; lower down, only from 3 to 4 inches per mile. The current velocities ranged from $\frac{3}{4}$ mile to 3 miles per hour, varying as a rule inversely with the width of the river.

During the time occupied in making the examination the river was unusually low, the water-gauge at Augusta showing only about 7 inches above the lowest low-water that has occurred for many years. Lower down, where the stream is larger, this difference, would, of course, be less, but no systematic water-gauge observations were made.

The stream was not gauged for discharge, but some idea of its magnitude at this stage may be gained from the following table, taken in connection with the velocities above mentioned.

Table of widths, average depths, maximum depth, and depth on the bars at various points between Augusta and Savannah.

Distances from Augusta.	Names of places.	Average width.	Depth.		
			On bar.	Average.	Maximum.
Miles.		*Feet.*	*Feet.*	*Feet.*	*Feet.*
1.6	Gardner's and Course's Shoal	660	2.7	2.25	7.0
4	Sand Bar Ferry Bar	660	2.0	2.3	5.0
6	Blue House Bar	540	2.5	3.0	5.0
8	Canoe Cut Bar	540	2.5	3.0	12.0
10	Bugg's Bar	560	2.0	4.75	11.0
16	Twigg's Upper Bar	465	3.0	4.8	11.0
$16\frac{1}{2}$	Twigg's Lower Bar	540	4.5	3.60	11.0
45	Hayne's Cut	200	No bar.	9.0	15.0
50	Flowery Gap Bar	480	3.8	4.5	6.5
62	Brigham's Bar	460	3.0	4.7	8.5
81	Hack's Bar	440	4.5	4.75	10.0
82	Lower Three Run Bar	460	3.5	4.5	11.5
89	White Woman's Point	440	3.5	4.3	9.2
95	Burton's Ferry Bar	500	4.5	4.5	9.5
96	King's Creek	180	No bar.	9.0	20.0

EXPLANATORY REMARKS.

Cupboard Creek and Rocky Creek enter the river on its right bank, a little below Blue House Bar.

Rutter's Creek enters the river on its right bank about 2 miles below Bugg's Bar.

Spirit Creek enters the river on its right bank, 3 miles below Twigg's Lower Bar.

Town Creek enters the river on its left bank, 4 to 5 miles below Twigg's Lower Bar.

McBean's Creek enters the river on its right bank, 13 miles below Twigg's Lower Bar.

Upper Three Run Creek enters the river near Demere's Ferry, about 3 miles above Hayne's Cut, on the left bank.

Between Upper and Lower Three Run Creeks the following-named creeks enter the Savannah River:

On left bank, Four Mile Creek, Penbrook, and Stone Creek.

On right bank, Jobber's Creek, Telfair's Mill Creek, Sweet Water Creek, and Stony Brook.

Lower Three Run Creek enters the river on its left bank.

Rocky Creek enters the river on its right bank, near White Woman's Point.

McDougald's Creek about 2 miles below.

King's Creek is the shorter arm of the two into which the river here divides, and is preferred for navigation.

Freshets caused by the melting of snow in the mountains, and by heavy rainfalls lower down are of frequent occurrence. They sometimes rise to considerable heights. At Augusta the water has been known to rise 40 feet above low-water. A rise of 34 feet, however, is rarely exceeded at that place, while at Briar's Creek, 133 miles lower down, the corresponding rise is 18 feet. About 15 miles above the city of Savannah a rise of 5 feet above the level of tidal high-water has been observed. It is stated that ordinary freshets rise to about two-thirds of the heights here given.

The oscillations of the tidal wave are ordinarily felt as high up as 28 miles above the city of Savannah, or about 45 miles from Tybee Roads.

Owing to the alluvial nature of the soil, its slight elevation above the low-water surface in the reaches below Augusta, and the winding course of the river, a more or less active erosion of the concave bends, and a building out of the opposite points occur during the high and falling stages. Chutes and cut-offs are ultimately produced, and the mass of materials thus scoured out and carried off causes new changes in the reaches lower down. Many "cut-offs" have occurred since the examination of 1854, and several within the last few years.

To improve the river thoroughly below Augusta will, therefore, require a more comprehensive system of works than is needed for the Upper Savannah River. There the principal obstructions consist of ledges of rocks, numerous bowlders, and gravel shoals; and a channel cut through them may be expected to be comparatively permanent. It is different with the low bottom lands and alluvial bed and banks of the river between Augusta and Savannah. Rock was met with at Hayne's Cut, only 45 miles from Augusta, and there it consisted of soft sandstone, and did not obstruct the water-way. At Twigg's Lower Bar, 16½ miles from Augusta, some gravel was found upon the shoal; but with these exceptions all the shoals were composed of fine sand.

The plan of improvement suggested by Mr. Fremont consists essentially in narrowing the river by low wing-dams of brush and stone, at points where excessive widths produce shoals; in aiding the formation of the low-water channel in a few localities by dredging; in removing snags, floating and overhanging trees, and pile obstructions, and in cutting off some projecting points. The object of these works is to establish a low-river navigable depth of 5 feet, and it is thought that this can be accomplished by narrowing the stream to a low-water width of about 400 feet, or less.

The number of snags, &c., to be removed, according to the report, is between 1,300 and 1,400; and the estimated total cost of the improvement, including 10 per cent. for engineering and contingent expenses, and the purchase and equipment of a snag-boat is placed by Mr. Fremont at $84,451.

It appears that the plan does not provide for shore protection, which will doubtless be indispensable at several points where the currents of the narrowed channel would impinge more seriously than now upon the concave bends below the wing-dams.

As it is not known whether the wing-dams will settle to any considerable extent, it will, perhaps, be better to assume for them in the estimate a minimum width of 16 to 18 feet, instead of 10 feet as suggested in the report. There is no established rule for fixing the distance between such wing-walls. At Saint Charles, Mo., where satisfactory results were obtained, it was assumed that a spur jetty will protect one and one-fourth times its length of shore above, and two and one-half times its length below. If these proportions are taken at 1 and 2 respectively,

the number and aggregate length of jetties estimated for in Mr. Fremont's report may be reduced about one-half.

The principle upon which the works should be designed is to increase the flow and depth in the selected channel during the low-water season without offering material obstruction to the discharge of floods, during which period the works should still tend to keep the main currents in the low-water channel. For this purpose the wing-dams should be comparatively low, being elevated but little above the low-water line, and they should gradually rise from the border of the channel towards the bank to prevent scouring eddies at the head and to form a good connection with the bank.

The low-water currents will be better directed into the channel if the spaces between the spurs are filled up to some extent, and to promote the accretion it is believed that between every two jetties one or two light and low hurdle traverses could advantageously be placed. This has been done on some western rivers. As the depths of the Savannah River where such traverses would have to be built are nowhere considerable, their construction would offer little difficulty, and, as suitable material is abundant, it is supposed that they could be built at the rate of 25 cents per linear foot.

For protecting the banks it is recommended to use thin, flexible brush mattresses, that will readily adapt themselves to irregularities in the slope of the bank. They should be weighted with enough stone to keep them in place. This kind of protection should not cost more than 75 cents per linear foot of shore line.

It is quite possible that it will be necessary, sooner or later, to connect the ends of the wing-dams by low training walls in many places, in order to fix definitely the borders of the low-water channel. But as wing-dams are not to be dispensed with and may alone suffice, and as a low training wall without such dams might be broken through during heavy freshets, and the channel transferred to the wrong side, no estimate is now made of the cost of training walls.

The work described will, no doubt, improve the stream to the extent of accommodating boats drawing about 5 feet of water during the low-water season. But as the river is not naturally fixed in its regimen, it must be expected that in time new difficulties and obstructions will be developed at other points, although it is impossible to say how soon it may be necessary to undertake improvements at points where good navigation now exists. It is believed that the necessary supplementary works will not be extensive or costly.

The recommendation of Mr. Fremont that the government should own and operate its own snag-boat, as is done on the principal western rivers, is approved. If appropriations be made for improving certain other rivers in South Carolina and Georgia, more or less obstructed by snags, the boat could be employed elsewhere when not required on the Savannah River. A light-draught tow-boat to assist the snag-boat, with two scows for receiving and taking away the trees, are included in the estimate.

No appropriation has ever been made for improving the Savannah River between Augusta and Savannah.

The works at the Cross-Sides, 4 miles above the last-named city, and some dredging between the Cross-Sides and Savannah, formed a part of the plan of improving the tidal compartment of the river, without reference to the navigation above the Cross-Sides, and were paid for from the appropriation for improving Savannah Harbor.

Attention is invited to some statistics given in the accompanying re-

port, concerning the commerce on that portion of the river under consideration.

Augusta possesses three short railroad connections with tide-water, viz, by way of Aiken and Branchville to Charleston, over the South Carolina Railroad; by the Port Royal and Augusta Railway to Port Royal, with lateral connections at Yemassee with both Charleston and Savannah; and by the Central Railroad of Georgia to Savannah, by way of Millen. The Savannah River lies between the road last named and the one leading to Port Royal.

ESTIMATES OF COST OF IMPROVING THE SAVANNAH RIVER, BETWEEN THE CITIES OF SAVANNAH AND AUGUSTA, GA., SO AS TO ESTABLISH A PERMANENT LOW-RIVER CHANNEL NOT LESS THAN 5 FEET DEEP.

10,000 linear feet of wing-dams, at $3.00	$30,000
20,000 linear feet of hurdle traverses, at 25 cents	5,000
8,000 linear feet of shore protection, at 75 cents	6,000
30,000 cubic yards dredging, at 20 cents	6,000
Removing projecting points of land	2,000
Removing pile obstructions	1,000
Removing 2,000 snags, &c., at $5	10,000
Add 10 per cent. for engineering and contingent expenses	6,000
Add 1 snag-boat, machinery, and outfit	25,000
Total	91,000

This work is located in the collection district of Savannah.

Savannah is the nearest port of entry.

The amount of revenue collected at the nearest port of entry during the past fiscal year was $61,126.65.

The following papers are sent with this report:

1. Report of Assistant Engineer S. L. Fremont.
2. Three sheets of tracings, marked 1, 2, and 3, respectively.

Very respectfully, your obedient servant,

Q. A. GILLMORE,
Lieut. Col. of Engineers, Bvt. Maj. Gen., U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. S. L. FREMONT, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Savannah, Ga., November 19, 1880.

GENERAL: In compliance with the instructions contained in your letter of the 6th of September, 1880, I have the honor to submit the following report of the examination and survey of the Savannah River between the cities of Savannah and Augusta.

INTRODUCTORY REMARKS.

The sources of the Savannah River are found in the mountains of Northeastern Georgia, and its general course is southeast. The channel is a very tortuous one, which makes the entire length of the river 450 miles, while the direct distance or length of territory drained by it is only about 250 miles.

It is estimated that the extent of country drained by this river and its tributaries is about 8,200 square miles.

No portion of this river above Augusta is navigable for steamers, but pole-boats have for many years been used as a means of transportation for the products and supplies of and for the country bordering that stream.

The tonnage from this region has of late years become so great that the aid of the general government has been successfully invoked to improve the navigation above Augusta sufficiently to enable light-draught steamers to ascend it for a distance of

some 50 or 60 miles. By means of an appropriation made at the last session of Congress this work of improvement, it is understood, is now proceeding.

South of Augusta the river is navigable for a considerable portion of the year for steamers drawing 4 to 5 feet of water, but during the dry seasons of summer and autumn the low stages of water render it very difficult for these steamers to ascend as high up as Augusta.

The numerous shoals and sand-bars which we find at various places along the upper portion of this "Middle Savannah River" present serious obstacles to low-water navigation, as frequently not more than 2 to 3 feet of water is found to cover them.

These shoals are of course caused, in most cases, by the widening of the bed of the river. Freshets above the city of Savannah, produced by the melting of the snows in the mountains and heavy rainfalls lower down, cause frequent overflows of the river banks, doing much injury to the crops of cotton and corn, and cutting away the shores.

The most serious difficulties that the steamers navigating the river have to encounter are met with near the city of Augusta and within 30 miles of it, though sand bars are found for about 104 miles below to King Creek and Herschman's Lake.

There are no places below King Creek that will be considered, there being no shoals with less than 5 feet of water. Below this point Haga Slaga Shoal was examined, but no improvement other than the removal of snags is required.

From Haga Slaga a general examination was made, and the distances were approximately obtained from the most reliable authority.

It was found that an accurate instrumental measurement of the whole distance was impracticable, since the cost would be too great to be justified by the appropriation for the survey.

The instrumental observations were made by my assistant, and a general examination by myself.

The current velocities at different points are very variable. They were at some places found to be equal to 3 miles per hour or 4.4 feet to the second, while in other places, where the stream is much widened, the velocity of the currents were less than ¾ of a mile per hour, varying generally with the width of the channel or water-way and seldom from a difference of level.

Next to the obstructing sand-bars, the greatest impediment to navigation by the river steamers is found in the continuous *rafts* of *floating timber* that are found in the "bights" or on the concave sides, and occupying the best, and often the only, navigable waters at the low stages of the river.

NAMES, POSITION, AND DESCRIPTION OF THE MOST IMPORTANT OBSTRUCTIONS, IN THE ORDER THEY OCCUR, DESCENDING FROM AUGUSTA, WITH A PROJECT FOR THEIR REMOVAL AND AN APPROXIMATE ESTIMATE OF THE COST.

I. GARDNER'S SHOAL.

Opposite the lower part of the city, and extending down to and connecting with "*Courses Shoal*," forming together a shoal of more than 1⅗ miles in length (see chart Sheet I, Fig. 1). This continuous shoal is the most serious obstruction met with during low-water navigation. Steamers of the lightest draught cannot pass it, and are compelled habitually to lighter their freight from near the Port Royal Railway bridge to and from the city of Augusta. It is therefore proposed to treat these as one long shoal, and by jetties as wing-dams to reduce the width of the water-way to 350 feet. This will require the construction of twenty-seven jetties—twenty along the South Carolina shore and seven on the Georgia side of the river. They should be 10 feet in width, 3 feet in height, and will vary in length from 50 feet to 375 feet. The aggregate length of the whole will be 6,135 feet, covering a distance of 7,500 feet on the South Carolina side and 1,500 feet on the Georgia side (see chart Sheet I, Fig. 1). It is proposed to construct them of brush, with small log—bottom and top—binders, and load them with three cubic yards of riprap stone to every hundred square feet of surface (see chart Sheet I, Fig. 8). For further description see page 26 of this report.

Most excellent brush for this purpose, including the willows, are found in great abundance along the banks of the river, and covering stone is also very convenient.

After careful inquiries as to the cost of materials, I have estimated the cost of these jetties at $2 per linear foot.

From this estimate I make the cost of improving the first 8,500 linear feet of this river, commencing at Augusta City bridge, as follows:

Estimate.

For 6,135 linear feet of jetty, at $2, $12,270. The works of improvement will extend along the shore line for a distance of 8,550 feet. To facilitate and properly direct the scour of a channel along the axis of this water-way, as indicated by the broken line,

a dredge might be advantageously employed to cut a channel 30 feet wide, 2.3 feet deep for 8,000 feet, removing about 20,500 cubic yards of material, at a cost of 18 cents per cubic yard, equal to $3,690.

This will give a total of $15,960 for rendering navigable at low-water the first $1\frac{3}{5}$ miles of the river from Augusta, much the most difficult portion of the river to navigate, and requiring the most expensive improvements.

The next shoal that gives trouble at low stages of the water is known as

II. SAND-BAR FERRY BAR.

This bar seems to have formed since the survey of 1853. It is over 2,200 feet in length, and requires jetties over an extent of shore line of 2,500 feet. Twelve jetties will be required here—six on the South Carolina side and five on the Georgia shore—aggregating in length 2,065 feet (see Sheet I, Fig. 2). A directing channel here, 30 feet wide and 3 feet deep for a distance of 1,500 feet, should be made.

Estimate.

Using the same kind of jetties, the cost will be—

For constructing 2,065 linear feet of jetties, at $2 per linear foot	$4,130
For removing 5,000 cubic yards of material with a dredge, at 18 cents, the cost will be	900
Total for improvement	5,030

III. BLUE-HOUSE BAR.

This shoal, about 400 feet in length, is the next in order as we descend the river. Extent of improvement is 2,100 feet in length.

It will require fifteen jetties—six on the Georgia side and nine on the South Carolina side of the channel—the aggregate length of which will be 1,470 linear feet.

The scour of this channel should be assisted by dredging a channel 400 feet long, 30 feet wide, and 2.5 feet deep (see Sheet I, Fig. 3).

Estimate.

For constructing 1,470 linear feet of jetty, at $2 per foot	$2,940
For dredging about 1,100 cubic yards of material, at 18 cents per yard	198
Total for this improvement	3,138

IV. CANOE CUT BAR.

This shoal is about 500 feet in length, and will require for its proper improvement 9 jetties, the total length of which will be 1,020 feet. Dredging for distance of 500 feet will be required, the cut having a width of 30 feet and a depth of 2.5 feet.

Extent of the works, 1,300 feet. (See Sheet I, Fig. 4.)

Estimate.

For constructing 1,020 linear feet of jetty, at $2	$2,040 00
For dredging 1,388 cubic yards, at 18 cents	249 84
Total	2,289 84

V. BUGG'S BAR.

This shoal extends a distance of 250 feet, but the extent of the line of jetties to remove it will be almost 1,450 feet.

The number of jetties required is eight, and aggregate in length 1,295 feet—four jetties on either side of the river. Directing channel $300 \times 30 \times 3$ feet $= 1{,}000$ yards. (See Sheet I, Fig. 5.)

Estimate.

For the construction of 1,295 feet of jetties, at $2 per linear foot	$2,590 00
For dredging 1,000 yards required here, at 18 cents	180 00
Total	2,770 00

VI. TWIGGS' UPPER BAR.

This shoal is about 1,600 feet in length, and will require for its improvement twenty-six short jetties, aggregating in length 1,775 feet. Extent of the line of improvement is 1,800 feet. (See Sheet I, Fig. 6.) Dredging here a channel 1,500 × 30 × 2 feet = 3,333 yards.

Estimate.

For construction of 1,775 linear feet of jetties, at $2 per linear foot	$3,550 00
For dredging 3,333 yards for this place, at 18 cents	266 64
Total	3,816 64

VII. TWIGGS' LOWER BAR.

This shoal is about 300 feet in length, while the works for improving it will extend over a distance of 1,175 feet. There will be required here 7 jetties, aggregating in length 990 feet. (See Sheet 1, Fig. 7.)

Estimate.

For constructing 990 linear feet of jetties, at $2 per linear foot	$1,980 00
No dredging required here.	

VIII. HAYNES' CUT.

At this point the river has cut across a bend and made two channels. The "cut-off" next the South Carolina side is the best channel at low-water, and by removing the floating and overhanging trees, cutting away the two shaded points "P" and "Q," and constructing a low dam of brush and stone 3 feet high, across the old channel at its narrowest and shoalest point, E, R, the new channel will be made navigable and convenient at all seasons of the year. (See Sheet II, Fig. 1.)

Estimate.

* For removing sixty floating trees of the three sizes as classed in this report at an average cost of $9 each	$540 00
No dredging required here.	
For constructing a brush and stone dam 12 feet wide and 3 feet high and 205 feet long, at $2.50 per foot, with 10 per cent. added for contingencies, and we have	563 75
For clearing the timber from the points "P" and "Q," to allow the water to cut them away—the clearing equal to one acre—and for excavating a ditch to aid the scour	350 00
For cutting off and removing overhanging trees	150 00
Total	1,603 75

It is believed that by cutting off the trees and heavy growth along the banks for the distance desired, those points of land will be removed by the action of the waters. No dredging.

IX. FLOWERY GAP BAR.

The shoal at this point is about 200 feet in extent, and will require twelve jetties of an aggregate length of 825 feet. The extent of the improvement along the shore will be about 1,000 feet. (See Sheet II, Fig. 2.)

Estimate.

For the construction of 825 linear feet of jetties, at $2 per foot, $1,650.00.

X. BRIGHAM'S BAR.

This shoal extended for a distance of about 1,600 feet and the extent of the works of improvement will be 1,930 feet on the South Carolina and 900 feet on the Georgia shore.

The number of jetties required on the South Carolina side is thirteen, aggregating in length 1,280 feet. On the Georgia side eleven jetties are required, and their united length will be 620 feet. The total length of jetties required for this place is 1,900 feet. (See Sheet II, Fig. 3.)

* See consolidated table of estimates for cost of removal of the different classes of floating trees.

Estimate.

For constructing 1,900 feet of jetties, at $2 per linear foot $3,800 00
No dredging required here.

XI. HACK'S BAR.

This shoal is only 75 feet in length and the extent of the works for removing it will be 540 feet long. The jetties, five in number, are all required on the South Carolina side. Their united length will be 415 feet. (See Sheet II, Fig. 4.)

Estimate.

For constructing 415 linear feet of jetties, at $2 per foot $830 00
No dredging required here.

XII. LOWER THREE RUNS.

The length of this shoal is 500 feet, and the shore line of improvement extends 1,300 feet. There will be nine jetties, and their aggregate length will be 935 feet.

In addition to the improvement by jetties, about forty snags or floating trees should be removed. (See Sheet II, Fig. 5.)

Estimate.

For constructing 935 linear feet of jetties, at $2 per foot	$1,870 00
For removing forty snags, at $10 each	400 00
Total	2,270 00

XIII. WHITE WOMAN'S POINT.

This shoal is about 200 feet in extent, and the extent of the works to remove it along the South Carolina shore is 700 feet.

Six jetties will be required, having a total length of 510 feet. (See Sheet II, Fig. 6.

Estimate.

For constructing 510 linear feet of jetties, at $2 per foot $1,020 00
No dredging required here.

XIV. BURTON'S FERRY BAR.

This shoal is 200 feet in extent, and the shore length of the works necessary to improve it will be 1,000 feet. Seven jetties, all on the Georgia shore, will be required, having an aggregate length of 765 feet. (See Sheet II, Fig, 7.)

Estimate.

For constructing 765 linear feet of jetties, at $2 per foot $1,530 00
No dredging required here.

XV. KING CREEK.

This creek seems to have existed for many years, and is simply a "cut" across several bends of the river near Herschman's Lake. It is about 1½ miles in length, and of late has so much improved that it seems to carry an abundance of water for all the purposes of navigation, at any stage of the river, and if the floating and overhanging trees were removed, some of the salient points along the bank cut away by the action of the currents—being cleared of their timber—and the old channel of the river slightly obstructed, a good, safe, and easy passage for steamers would be obtained. There are thirty-four piles now obstructing the head of this creek, placed there some years ago to divert the water to the old channel of the river. They are in water 10 feet deep and show 3 feet above low-water. They should be removed.

At the date of the survey made in 1853, a canal across the bend of the river was recommended as the best means of improvement here. I find, however, the flow of water has so much increased in volume through this creek, in spite of the pile dam erected at its head, to close it, that I propose its improvement in the following manner, and make it the only navigable water-way:

1. Remove all the floating timber in the creek, and cut away the overhanging trees.
2. Construct a low dam at A V, across the old channel, of timber, brush, and stone.
3. Cut the timber and brush from the points shaded and marked P, Q, R, S, T, U.

(See Sheet No. III, Fig 1.)

Estimate.

For removing 74 floating trees, at $10	$740 00
For removing 26 overhanging trees, at $8	208 00
For cutting the timber from the points shaded, estimated at 3.10 acres, at $150 per acre, and removing old piles, $100	565 00
For cutting ditches along the lines to be scoured off in length, 1,410 linear feet, at 25 cents per foot	352 50
For constructing a low dam at "A V," 180 feet long, 4 feet high, and 15 feet wide, of timber, brush, and stone, at $4 per linear foot	721 00
Total	2,585 50

List of places requiring improvement, their distances from Savannah and Augusta, their extent and the extent of the works of improvement along the shores, the number of jetties and their aggregate length; also the material constituting the shoals.

Number.	Names of places requiring improvement.	Distances from—		Length of—		Number of jetties.	Total length of jetties.	Remarks, material, &c.
		Savannah.	Augusta.	Shoal.	Works.			
		Miles.	*Miles.*	*Feet.*	*Creek in length is (feet.)*		*Feet.*	
1	King Creek	152	96		7,920	*1	180	Sandy.
2	Burton's Ferry	153	95	200	1,000	7	765	Do.
3	White Woman's Point	159	89	200	700	6	510	Do.
4	Lower Three Runs	166	82	500	1,300	9	935	Do.
5	Hack's Bar	167	81	75	540	5	415	Do.
6	Brigham's Bar	186	62	1,600	2,830	24	1,900	Do.
7	Flowery Gap Bar	198	50	200	1,000	12	825	Do.
8	Hayne's Cut	203	45	820	820	0	0	Do.
9	Twigg's Lower Bar	231½	16½	300	1,175	7	990	Gravel and sand.
10	Twigg's Upper Bar	232	16	1,600	1,800	26	1,775	Sandy.
11	Bugg's Bar	238	10	250	1,450	8	1,295	Do.
12	Canoe Cut Bar	240	8	500	1,300	9	1,020	Do.
13	Blue House Bar	242	6	400	2,100	15	1,470	Do.
14	Sand-Bar Ferry Bar	244	4	2,200	2,500	12	2,065	Do.
15	Course's Bar	246½	1½	8,500	9,000	27	6,135	Do.
16	Gardner's Bar	248	0					
	Total			17,345	27,515	168	20,280	

*Dam across old channel.

This table shows that all the shoals that give trouble are within 96 or 100 miles of Augusta. The shoals are composed of fine sand, except at Twigg's Lower Bar, where some coarse gravel is found. No rock was encountered on the surveys, except at Haynes' Cut, and this was a soft sandstone which could be removed with a dredge, but at present it does not obstruct the water-way.

CONCLUSION OF LIST OF IMPROVEMENTS.

This concludes the list of shoals and places where other obstructions exist, with the exception of the double row of piles between Hack's and Brigham's bars. These piles were driven to obstruct the channel during the civil war. The accumulation of drift wood has forced the current to cut a channel around them, which is now used by steamers, but the passage is difficult, and they should be removed. (See table showing location, &c., of principal obstructions, Confederate obstructions.)

The estimated cost of their removal is $1,000.

There are no obstructions below King Creek that will interfere with steamers having a draught of 5 feet or less.

The shoal at Haga Slaga does not show less than 5 feet of water at any time. The removal of "snags" is all that is required there.

THE GENERAL BEHAVIOR OF THE RIVER AS REPORTED AT VARIOUS STAGES OF THE WATER, WITH ITS ORDINARY AND GREATEST FRESHET RISE, AT VARIOUS PLACES.

The greatest rise of this river during freshets at Augusta is understood to be 40 feet above mean low-water, when the river was 4 feet deep in the streets of Augusta. The last occurrence of this was in 1875. Freshets, however, seldom rise above 34 feet from mean low-water at Augusta; 18 feet at Briar Creek, and 5 feet above high-water (tide) at the Savannah & Charleston Railroad bridge (15 miles above Savannah).

The ordinary freshets to which the river is subject do not raise the water more than two-thirds of the elevations here given. From about 25 miles below Augusta the low alluvial lands commence, and are, as stated above, often overflowed by the river during high stages of the water. In consequence of the nature of the soil and tortuous course of the river there is a constant wearing away of the banks on the concave sides, while the accumulations on the convex shores are equally abundant. The consequence is the river constantly changes its bed, wearing away on one shore and making on the opposite, until the bends become so great and the distances so small across the necks that an unusually high rise of water cuts across and reforms the line. Many of these "cuts-off" have occurred within the last few years, and many of them since the survey made by Captain Gilmer, Corps of Engineers, in 1853.

In quite a number of places the channel has been improved by the scour and straightening caused as above described. King Creek is an especial case in point. Therefore, to maintain a permanent channel of 7 or 8 feet at low summer water, a great many spur jetties, similar to those proposed for this improvement, would be required. This project is based upon obtaining 5 feet at the lowest stages of the river at the shoalest places. I believe a depth of 7 feet at low summer water could be obtained by additional works, within a reasonable cost.

FLOATING TREES, SNAGS, &c.

There are trees that have been washed out on the concave sides of the river by the scour in times of high-water and lay generally where they fall. At these places on the concave shores called "bights" the deepest water is found, and when the stream is narrowed down by low summer water they not unfrequently occupy the entire available water-way, and it is with great difficulty that steamers can pass over them. This is especially the case at King Creek (see page 14 of this report).

To remove these serious obstructions, a snag-boat consisting of a large flat with suitable machinery should be employed. With such a machine, more can be done to remove impediments to easy and safe navigation of this river with a moderate expenditure than by any other means known to me.

Should it be expedient to build a snag-boat, the cost of the lighter or flat, suited to the purpose of this work, will be about $1,500 00
It is supposed the machinery will cost about 15,000 00

Total cost of a snag-boat 16,500 00

The floating timber obstructions mentioned above are found especially at two points below King Creek, viz, at "Haga Slaga," and at "Sister's Ferry," and at other places named in the following table of snags:

A table showing the location of the principal obstructions caused by snags and floating trees.

Between the places and landings named.	Class 1st.	Class 2d.	Class 3d.	Distance from Savannah.	Remarks.
Savannah				0	Trees of the 1st class are not larger than one foot in diameter. The 2d class from one to two feet in diameter. The 3d class are all trees larger than two feet in diameter.
	2	0	3		
Purysburg				25	
	4	5	5		
Beck's Ferry				30	
	26	17	38		
Ebenezer				40	
	16	35	44		
Sister's Ferry (Georgia)				60	
	9	32	19		
Parachueckla				72	
	18	56	59		
Martin's Landing				98	
	4	23	21		
Poor Robin				109	
	22	34	46		
Haga Slaga				112	
	0	4	2		
Brier Creek				115	
	0	27	35		
Mathews Bluff				126	
	3	28	34		
King Creek (mouth)				150½	Twenty-six overhanging trees to be removed.
	20	35	19		
King Creek (head)				152	
	0	3	5		
Burton's Ferry				153	
	6	15	6		
Johnson's Landing				158	
	0	0	3		
White Woman's Point				159	
	6	18	9		
Brown's Landing				160	
	0	1	2		
Stoney Bluff				163	
	0	1	2		
Little Hell				166	
	6	32	28		See obstructions. "Confederate piles."
Steel Creek Landing				170	
	0	0	0		
Brigham's Landing				186	
	0	0	0		
Griffin's Landing				193	
	0	1	0		
Hancock's Landing				197	16 mile "Reaches."
	25	14	27		
Point Comfort Landing				203	
	0	1	0		
Shell Bluff				215	
	3	12	17		
Gray's Point				222	
	0	18	11		
Lower Silver Bluff				223	
	0	3	2		
Upper Silver Bluff				230	
	3	45	40		
New Savannah				238	
	0	25	9		
Augusta				248	
Total	309	818	836		

Consolidated table of estimates.

1	Gardner's and Course's Shoals	$15,960 00
2	Sand-Bar Ferry Bar	5,030 00
3	Blue House Bar Shoal	3,138 00
4	Canoe Cut Bar Shoal	2,289 84
5	Bugg's Bar Shoal	2,770 00
6	Twigg's Upper Bar Shoal	3,816 64
7	Twigg's Lower Bar Shoal	1,980 00
8	Hayne's Cut Bar Shoal	1,603 75
9	Flowery Gap Bar Shoal	1,650 00
10	Brigham's Bar Shoal	3,800 00
11	Hack's Bar Shoal	880 00
12	Lower Three Runs Shoal	2,270 00
13	White Woman's Point Shoal	1,020 00
14	Burton's Ferry Shoal	1,530 00
15	King Creek Obstructions	2,585 50
16	Pile obstructions by the late civil war	1,000 00
17	Removing floating trees and snags exclusive of those estimated for	10,500 00
		61,773 73
	Add 10 per cent. for contingencies	6,177 37
		67,951 10
	To this add cost of a snag-boat	16,500 00
	Total	84,451 10

Should this work be undertaken I recommend that not less than $25,000 of the amount of the foregoing estimate be made available immediately after the approval of the act, in order to begin the work in the spring—far the best season for its prosecution.

The estimates for the improvement recommended will, I believe, be ample to remove all shoals and other obstructions, including snags, that are now so troublesome at the low stages of the river. The work should be commenced early in the spring and continued to July, when it will probably be found necessary to suspend it until November, in consequence of the great difficulty of preserving the health of the employés during the summer months.

FACE OF THE COUNTRY.

The face of the country within 25 miles of Augusta is somewhat elevated—the lands are generally in a high state of cultivation from the banks of the river back to the interior. Below that distance the lands are low—in many cases swampy—and are everywhere covered with a dense growth of timber and brush—ash, cypress, and cottonwood on the low lands, and hickory, oak, and pine on the table-lands. Occasionally there are high bluffs extending from the river far back into the interior. In Richmond, Burke, and Screven Counties there is an abundance of granite, buhr, and limestone to be found. Willow and other brush grow along the bank to the water's edge, thus supplying the material for the improvements at convenient points.

DESCRIPTION AND METHOD OF CONSTRUCTION OF JETTIES.

The jetties will consist of a series of brush and stone covered mattresses, to be constructed in the following manner: Place three logs upon a platform or "ways," suited to the purpose of construction with a view of launching them into the river from the bank or near where they will be required.

Into these lower logs as binders we bore 2½ inch holes at intervals of 5 feet, and insert hickory stakes rived from the tough trees of the abundant growth in the vicinity and wedge the lower ends. Across these lower binders compactly pile a good quality of brush and place across it the upper binders directly over the lower ones. These binders, having been already bored at the proper intervals to correspond with the lower ones, the upper ends of the tie stakes are inserted. The upper and lower binders are then pressed strongly together, compressing the brush between them, when the tie stakes are fastened by wedging the upper ends. Should it be found necessary a few iron bolts, with nuts, can be added as ties.

These binder logs should be from 10 to 11 inches in diameter for the lower ones, and from 7 to 8 inches in diameter for the top ones. The horizontal distance between them should be 3½ to 4 feet, the mattresses being 10 feet or more in width. Upon this mattress of brush, when in position, place riprap stone to the height of about 10 inches, or at the rate of 3 cubic yards to the 100 square feet of surface. (See Sheet I, Fig. 8.)

STATISTICAL STATEMENT.

This work is located in the collection district of Savannah.
The nearest port of entry is Savannah.
The nearest light-house is Fig Island, at Savannah.
The nearest fort is Jackson.
The amount of revenue collected at the nearest port of entry during the last fiscal year was $61,126.65.

The general benefits to this portion of the country to be derived from this improvement are many, amongst them the following:

Greater facilities will be afforded for the transportation of the products and supplies of the country.

A safer, quicker, and more convenient communication with tide-water and ocean-going steamers, and a consequent reduction of the cost of transportation will be obtained. These benefits, and many others, will accrue to the planters, merchants, and manufacturers in the vicinity of the Savannah River, in both Georgia and South Carolina.

Trade and commerce thus encouraged, a large area of country will be more rapidly developed. The improvement will aid in opening and developing the country, not only in the vicinity of the river, but far back into the interior.

Annexed are two tabulated statements, giving tonnage, population, and products for the territory contiguous to the river, including Savannah and Augusta, a large portion of which may be included as constituting business for this line of improvement.

STATISTICAL STATEMENT OF BUSINESS THAT WAS DONE BY THE TWO LIGHT-DRAUGHT STEAMERS OPERATING ON THE SAVANNAH RIVER BETWEEN SAVANNAH AND AUGUSTA DURING THE FISCAL YEAR ENDING JULY 1, 1880.

This statement is compiled from the best available sources of information, and is believed to be approximately correct.

Cotton.

Number of bales of cotton carried to Savannah	24,640
Number of bales of cotton carried to Augusta	12,320
Total	36,960

Naval stores.

Number of barrels of rosin carried to Savannah	5,276
Number of barrels of spirits turpentine carried to Savannah	890
Total	6,166

Guano.

Number of pounds of guano carried to the plantations from Savannah	1,677,200
Number of pounds of guano carried to the plantations from Augusta	838,600
Total	2,515,800

General merchandise.

Number of pounds of merchandise carried from Savannah and Augusta to the country along the river:	
Savannah	29,628,000
Augusta	14,814,000
Total	44,442,000

Table compiled from the census reports of 1870, *showing the amount of population and some of the productions of the counties bordering the river, on both sides, between Savannah and Augusta.*

Names of counties bordering the Savannah River.	Population as per census of 1870.	Number of bales of cotton.	Number of bushels of corn.	Number of pounds of wool.
Chatham, Georgia	41,279	63	55,220	762
Effingham, Georgia	4,214	294	55,854	1,868
Screven, Georgia	9,175	3,086	153,242	9,901
Burke, Georgia	17,679	14,290	203,735	625
Richmond, Georgia	25,724	2,017	77,895	1,222
Total	98,071	19,750	545,946	14,378
Beaufort, South Carolina	34,359	7,486	285,532	1,477
Barnwell, South Carolina	35,724	24,910	781,054	1,951
Total	70,083	32,396	1,066,586	3,428
Aggregate	168,154	52,146	1,612,532	17,806

Add 20 per cent. for the increase of population and productions in ten years and we have—population, 201,784; bales of cotton, 62,565; bushels of corn, 1,935,038; pounds of wool, 21,367.

It is believed these figures give the approximate facts for 1880.

LEVELS.

The Port Royal Railroad levels give the elevation of Augusta as 154 feet.

Mr. James P. Carson, civil assistant engineer, in his report on the examination of the Savannah River above Augusta in 1878, gives the elevation deduced from barometric observations taken at the signal office at that place as 148 feet. On page 37, appendix 18, of the United States Coast Survey Report of 1876, the elevation of a bench-mark near the Port Royal Railroad offices is given as 132.36 feet above sea-level. This bench-mark could not be found. The elevation of the ground in the vicinity above low-water in the river at Augusta is 22.6 feet.

The elevation of low-water at Augusta, determined by observations on the *aneroid* made during the survey, was 125 feet, making the elevation of the ground in the vicinity of the Port Royal Railroad depot 147.6 feet. Therefore, the elevation of 154 feet given by the railroad levels is presumed to be the most reliable.

The *aneroid* used during the survey was carefully adjusted before leaving Savannah, but as no levels deduced from observations on it (except at Augusta) are within the range of probability, and as it was found on the return to Savannah to be considerably "out," it is supposed that it was thrown out of adjustment during transportation on the river.

Table of levels.

Places.	Distance in miles.	Fall in feet.
Augusta to Silver Bluff	18	22.423
Silver Bluff to Haynes Cut	27	29.056
Haynes Cut to Steel Creek	33	10.297
Steel Creek to Savannah	170	68.624
Augusta to Savannah	248	130.400

The above distances and slope notes refer to the river surface.

CONCLUSION.

The levels that have been obtained, and which are relied upon as correct, were taken from a bench-mark at the Port Royal Railway Station at Augusta as 154 feet above sea-level. The low-water elevation of the river at Augusta is 131.4 feet above sea-level, or 22.6 feet below the bench-mark. Low-water at Savannah is 1 foot above low-water at the sea-shore, hence the difference of level between the surface of the river at Augusta and Savannah is 130.4 feet. A table of the levels, as it was most practicable to obtain them, is inclosed. Three sheets of tracings showing the location of the shoals

and other obstructions are also inclosed, together with three others of a former survey returned, and a general chart of the river throughout the entire distance examined.

In making this survey I have been ably assisted by Mr. James P. McLaws, civil engineer, who has conducted the field-work, with the charge of a small party, very satisfactorily, and is entitled to my thanks.

I am, general, very respectfully, your obedient servant,

S. L. FREMONT,
Assistant Engineer.

Maj. Gen. Q. A. GILLMORE,
Lieutenant-Colonel, Corps of Engineers, U. S. A.

EXAMINATION OF EDISTO RIVER, SOUTH CAROLINA.

UNITED STATES ENGINEER'S OFFICE,
New York, December 31, 1880.

GENERAL: I have the honor to submit the following report of an examination of the Edisto River, South Carolina, with an estimate of the cost of its improvement, provided for by section 2 of the act approved June 14, 1880.

This duty was assigned to me by letter dated June 17, 1880.

The examination was conducted by Capt. J. C. Post, United States Engineers, whose report is herewith transmitted. He was assisted by Mr. J. H. Hallonquist.

The examination was made during the months of September and October, 1880, when the river was in a favorable condition for the work, being only about 12 inches above extreme low-water.

The Edisto is one of the principal rivers of South Carolina. It is formed by the junction of the North and South Forks, which unite in the southern part of Orangeburg County. The South Fork, commonly known as the South Edisto, is the main river.

The Edisto rises in Edgefield County. It flows through the central portion of Aiken County, then forms the boundary between the counties of Barnwell and Orangeburg, and finally passes through Colleton County to the sea, near Saint Helena Sound.

The river changes its name several times. From its junction with the North Fork at Milltown, about 30 miles from the mouth, it is called simply the Edisto; thence for a few miles to the point where Dawhoo River, a narrow, tortuous, tidal stream, connects it with the North Edisto, an arm of the sea, it is known as the Ponpon River, and its lower reach of about 20 miles is termed the South Edisto. The Edisto receives a considerable number of tributaries, none of which are of any importance except the North Fork and the Four-Hole Swamp. The area of country drained by the river is estimated at 3,000 square miles, its total length being about 300 miles. The upper portion for about two-thirds of its entire length generally follows a southeasterly direction. For the last 100 miles it has a southerly course.

The examination commenced at Guignard's Landing, in Aiken County, about 77 miles above the junction of the Edisto with its North Fork, and extended to the mouth, a total length of 260 miles. Two railroads cross the river on this line, viz, the South Carolina Railroad, about $\frac{1}{2}$ a mile below the junction, and the Charleston and Savannah Railroad at Jacksonborough, 144 miles lower down, and about 40 miles from the mouth.

The upper river for the first 77 miles flows through bottom land averaging $\frac{3}{4}$ mile in width on each side of it. The banks are only about

1 foot above the low-water stage. Freshets rise to a height of about 5 feet, when the whole adjacent swamp becomes overflowed. To this large expansion is doubtless to be attributed the fact that the floods do not rise very high, and are seldom destructive. From the upper to the lower railroad crossing the banks of the river are bluffy.

The surface velocities were found to be quite uniformly about 3 miles per hour as low down as the head of the tidal compartment of the river, which was found to be about 75 miles from its mouth. The mean rise and fall of tide is 2½ feet at the crossing of the Charleston and Savannah Railroad, and about 6 feet at the mouth. The water is fresh to some distance below the junction with the Dawhoo River. No levels were taken during the examination. The railroad levels show a fall of water surface of about 100 feet from the upper to the lower railroad crossing, a distance of 144 miles.

The river course is for the greater part tortuous, though occasionally alternating with comparatively straight reaches or long sinuous sweeps. At several places the bends are so excessive that while their length is about one mile the distance across the neck is only a few feet.

These narrow strips are frequently cut through at freshets, and form rapids. Over 20 places were noted during the examination where such new channels or cut-offs are now in process of formation.

In the upper division, extending as far down as the junction with the North Fork, the flow of the stream is disturbed and weakened in many places by branches which leave the main channel at certain points and rejoin it lower down. At a number of places, both above and below the junction, the river is more or less obstructed by logs and snags as well as by shoals, consisting generally of sand, but at some points of hard clay.

Pile obstructions were found at two places. Those just below Milltown, driven during the late civil war, seem to be especially dangerous.

The needed improvement in the navigation of the stream would, it is thought, be secured by the removal of the obstructions specified in Captain Post's report.

The quantity of valuable timber growing in the country bordering on the river and its tributaries is very great, but the trade is at present confined to the season of freshets.

While the examination was in progress the banks were strown with wrecked rafts, and hundreds of rafts were seen tied to the banks waiting for a rise. An improvement of the river would undoubtedly result in a great development of the timber and lumber business. The same may be said of rice culture, to which extensive areas of land along the banks appear to be well adapted.

A few statistics relating to these matters are given in the accompanying report.

Considering the importance and great length of the Edisto River, and the character of the country through which it flows, the estimated cost of improving it, so as to establish a safe navigation at all seasons of the year for light-draft steamboats from the sea to the junction of the North and South Forks, and perhaps some distance higher up, and for rafts and flat boats from the junction to Guignard's Landing, seems to be moderate.

It is not deemed advisable to extend the improvement beyond the point last named, as the obstructions are too numerous and the river's regimen too unstable to render such works permanent, unless built at great cost.

It is believed that rafting there must continue to be dependent upon freshets. The same remark applies to the North Fork.

The plan of improvement suggested by Captain Post is approved. It comprises:

1. Enlargement and clearing of all the new channels now in progress of formation.
2. Forming new channels across necks of bends where needed.
3. Shutting off lateral arms which now weaken the stream.
4. Removal of logs, snags, and pile obstructions.
5. Removal of shoals of sand and clay; in one case by building a deflecting jetty.

The total cost of these improvements, exclusive of contingent expenses, is estimated at $30,350.

By adding 10 per cent., to cover superintendence and inspections, the estimate is increased to $33,385.

No appropriation has ever been made by Congress for improving the Edisto River.

This improvement is located in the collection district of Charleston; Charleston, Beaufort, and Savannah, the nearest ports of entry.

The report of Capt. J. C. Post, Corps of Engineers, U. S. A., is sent herewith.

Very respectfully, your obedient servant,

Q. A. GILLMORE,
Lieut. Colonel of Engineers, Bvt. Maj. Gen. U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF CAPT. JAMES C. POST, CORPS OF ENGINEERS.

UNITED STATES ENGINEER OFFICE,
Charleston, S. C., December 22, 1880.

COLONEL: In compliance with the instructions contained in your letter of September 14, 1880, I have to submit the following report of the examination of Edisto River, South Carolina.

The Edisto River is formed by the junction of two branches called the North and South Forks, both of which rise in Edgefield County, South Carolina, and unite half a mile above the crossing of the South Carolina Railroad in the southern portion of Orangeburg County. From this point it flows undivided to its junction with the Dawhoo River, a distance of 160 miles. For a few miles above this junction it is known as the Ponpon River, and below it is called the South Edisto. Dawhoo River is a narrow, tortuous stream, about 15 miles long, connecting the Edisto with an arm of the sea called the North Edisto. Dawhoo River, the upper portion of the South Edisto, and the upper portion of the North Edisto, known as the Wadmalaw River, form a part of the inland water route between Beaufort and Charleston.

The examination of the river was commenced on the South Fork, at Guinguard's Landing, about 77 miles above the junction, and extended to the coast, a distance of 260 miles. Above this landing it is narrow and obstructed to such a degree by logs and sand shoals that it was thought unnecessary to commence at a higher point. The water at the time was about 1 foot above extreme low-water, and the current was ascertained to be about 3 miles an hour, and generally uniform to Kennedy's Bridge, where a diminution of $\frac{1}{2}$ mile an hour was observed. From the lines of levels taken on the South Carolina and Charleston and Savannah Railroads the fall in the river from the crossing of the former to that of the latter is about 100 feet. The distance between these bridges by the river is 144 miles.

Above the junction the South Fork flows in a tortuous channel through bottom or swamp lands about $1\frac{1}{2}$ miles wide. These bottoms are soft, and their general level is seldom more than 1 foot above the surface of the water at its average stage. They are completely overflowed during freshets, which in the upper portion of this river rise about 5 feet. The increased current at such times and the obstruction of different portions of the river channel by logs and floating débris frequently result in new

channels. These usually connect the extremities of bends, and having a greater fall through them than around the bends, generally remain the channel after the freshet subsides and sometimes form rapids.

From the junction to the coast the river flows in a winding course. To the crossing of the Charleston and Savannah Railway, at Jacksonborough, it lies between banks varying from 3 to 30 feet in height; generally those below 8 feet in height are of sand and those greater of clay. Below this crossing the rice lands begin and the banks are low. This cultivation extends as far as fresh water can be obtained, which is below the junction with the Dawhoo. The river is obstructed with logs and many shoals as far down as Jacksonborough. No other obstructions exist to the sea in either the South Edisto, Dawhoo, and the North Edisto, except in the Edisto near Milltown, where there is a shoal and pile obstructions.

DETAILED DESCRIPTION OF THE RIVER.

Guinguard's to Holman's Bridge—30½ miles. The river is about 55 feet wide and 3½ feet deep for about 17 miles. Beyond it increases, though somewhat irregularly, to 125 feet wide and 4 feet deep at the bridge. There are some 19 places where streams varying from 8 to 15 feet wide leave the river, producing shoals, and enter it again below. There are also two new channels, one 6½ miles and the other 5 miles above Holman's, which are forming across bends. These will reduce the distance about 350 feet. New Bridge is 17½ miles above Holman's.

Holman's to Binnaker's Bridge—11 miles. The river is generally wide and straight. There are 13 streams, varying from 6 to 15 feet wide, which leave the river and join it again, and there are also four new channels across bends partially open, which save some 3,550 feet. The first of the latter is about 550 yards, the second 3½ miles, the third 5 miles, and the fourth 8 miles below Holman's.

Binnaker's to New Bridge No. 2—11 miles. Average width of river, 125 feet; depth, 5 feet. Four streams, from 6 to 10 feet in width, leave the river and return to it. Seven new channels across bends are partially open, which reduce the length about 3,000 feet. The first is 1 mile, the second immediately below the first, the third 2 miles, the fourth 2¾ miles, the fifth 5½ miles, the sixth 6¾ miles, and the seventh 8¾ miles below Binnaker's.

New Bridge No. 2 to South Carolina Railroad Bridge—24¾ miles. In this section the river has short places in bends. Two streams, about 6 feet wide, leave the river and return to it again within a short distance. Four new channels have been partially formed across bends. Distance around bends, 3,180 feet; length of new channels, 120 feet. The fourth of these requires special attention, as it avoids a dangerous curve. Width of river, 150 feet; depth, 5 feet.

South Carolina Railroad Bridge to Ferry-20 miles. About 100 feet below the bridge a row of piles, probably the remains of an old bridge, obstruct the channel. A short distance below this a number of trees partly in the water, together with snags, are gradually forming new shoals. These are to be found at intervals to River's Bridge, a distance of 9 miles. There are also two rapids, 50 feet long, in each of which the fall was estimated to be about 1 foot. These are formed by new channels across bends where there is considerable fall, becoming obstructed by logs, &c. The greater portion of the water now flows through these new channels, and those around the bends are shoaling. Width of river, 200 feet; depth, 4 feet.

Ferry to Kennedy's Bridge—34 miles. In the first 19 miles there are two shoals of hard clay obstructing the channels. In the remaining 15 miles there are several horse-shoe bends of over a mile in length, with only a few feet between their extremities. There are also shoals at several of the bends, and 2 rapids, each 100 feet long, across other bends, formed as already stated, in which the fall was estimated to be 3 feet. The width and depth remain the same.

Kennedy's to Good Hope Landing—51 miles. There is a rapid in the first 12 miles about 300 yards long. It would improve the navigation of the river to close this and clear the old channel of logs, &c. In the remaining 39 miles nothing but imbedded logs obstruct the channel. The width and depth of the river continue the same.

Good Hope to Jacksonborough—39 miles. At Good Hope the influence of the rise and fall of the tide is felt to the extent of 2 or 3 inches. About 12 miles below a shoal of indurated clay about ½ mile long narrows the channel by projecting into it 6 feet. It is from 2 to 3 feet in thickness, and can be removed at low-water. Width of river, 300 feet; depth at low-water, 8 feet. Tide rises and falls 2½ feet at Jacksonborough.

Jacksonborough to mouth of river—39 miles. A few hundred feet above Willtown, or Milltown, 9 miles below Jacksonborough, an extensive sand shoal has formed within the past year to such an extent that the channel has become reduced to 60 feet in width, with a depth of 9 feet at low-water. The river here makes a bend of about 100 degrees. Width at Willtown, 950 feet; rise and fall of the tide, 6 feet. About 1,000 yards below a double row of piles, driven during the late war, obstructs the channel. They are 289 in number, of which 120 are in the channel proper. These latter have been ctu

off by raftsmen about 3 to 4 feet below extreme low-water, and form a very dangerous obstruction to navigation. Dawhoo River enters about 5 miles below these. This river and the North and South Edisto are free from obstructions and of sufficient size to accommodate the present inland commerce.

PROPOSED IMPROVEMENTS.

It is proposed to clear the channel of the piles below Willtown and at the South Carolina Bridge and remove the logs, snags, and shoals, clay and sand obstructing the river. In doing this it is proposed to enlarge and clear all the new channels save one, that between Kennedy's and Good Hope Landing, and make several others across the bends contained in the section between the ferry and Kennedy's Bridge. It is expected that the old channels will fill up as soon as the new ones are fully opened. The rivers should also be confined to a single channel above the junction by closing all the small streams diverting the water. All of this can be done with a reasonable prospect of success at a comparatively small cost, with the exception of the removal of the sand shoal above Willtown. This shoal has apparently a sufficient channel across it for all the possible wants of commerce, even when the improvements are made. This would be true were it not for the very sharp bend and swift current at this point, which together render it exceedingly difficult for vessels of any kind or rafts to keep the channel. A deflecting jetty 100 feet long will be required to remove the shoal and keep it from reforming, and even this may not be sufficient.

The following is the estimate of the cost of these improvements, viz:

Clearing river and concentrating currents from Guinguard's to Holman's Bridge	$4,800
Same from Holman's to Binnaker's Bridge	1,500
Same from Binnaker's to New Bridge No. 2	3,900
Same from New Bridge to South Carolina Railroad Bridge	3,600
Clearing river from South Carolina Railroad to Ferry	3,800
Clearing river from Ferry to Kennedy's Bridge	6,900
Clearing river from Kennedy's to Good Hope Landing	1,150
Clearing river from Good Hope to Jacksonborough	2,100
Constructing jetty, $2,000; removing piles near Willtown, $600	2,600
Total	30,350

These estimates are based upon removing the obstructions by hand during the low stages of the river.

PRODUCTIONS OF THE SURROUNDING COUNTRY, AND PROBABLE COMMERCE OF THE RIVER, IF IMPROVED.

The principal productions of the country are timber, lumber, and rice. Above the junction there is an immense amount of valuable timber, such as yellow pine, hickory, gum, and white and red oak, in the immediate vicinity of the river. Large quantities are already sent to market, but the trade, on account of the obstructions, is now restricted to the seasons of high-water The production of lumber for this same reason is limited to the requirements of home consumption. Rice culture has only recently been commenced in this section, and there is a very considerable amount of land suitable for it. All the rice grown has, at the present time, to be transported 18 miles by land to the South Carolina Railroad, and this is an expense too great to permit a rapid development of this interest.

Below the junction there are 5 large saw-mills whose shipments now amount to 800,000 feet a month, besides several other smaller mills.

With the proposed improvements all of these enterprises would be extended to a very large degree, and light-draught steamers could easily reach the junction, and probably much higher. The rice planted below Jacksonborough would also be benefited greatly.

The North Fork of the river was not examined, as from the best information that could be obtained it was ascertained to be of so little depth that it was not even navigable for rafts except in the highest stages of the water. At the junction with the South Fork it is 50 feet wide and about 5 feet deep.

A chart of the river compiled from Mill's Atlas and the survey, accompanies this report.

The field work of the survey was by your direction intrusted to Mr. J. H. Hallonquist, who deserves commendation for the careful and intelligent manner in which he collected the data pertaining to the river.

This improvement is located in the collection district of Charleston. Charleston, Beaufort, and Savannah are the nearest ports of entry.

Very respectfully, your obedient servant,

JAS. C. POST,
Captain of Engineers.

Lieut. Col. Q. A. GILLMORE,
Corps of Engineers, U. S. A.

EXAMINATION OF SALKIEHATCHIE RIVER, SOUTH CAROLINA.

UNITED STATES ENGINEER OFFICE,
New York, December 29, 1880.

GENERAL: I have the honor to submit the following report of an examination of the Salkiehatchie River, South Carolina, with an estimate of the cost of improvement, provided for by section 2 of the act approved June 14, 1880, and assigned to my charge by letter dated June 17, 1880:

The examination was conducted by Capt. J. C. Post, United States Corps of Engineers, whose report is herewith transmitted. He was assisted by Mr. J. H. Hallonquist.

There are two rivers named Salkiehatchie in South Carolina, viz, the Big Salkiehatchie and the Little Salkiehatchie, which unite at a point about 80 miles distant by river from the sea coast. Below the crossing of the Charleston and Savannah Railroad, which is about 24 miles below the junction of the two rivers, the stream is called the Combahee; but it is not known precisely at what point this change of name takes place. The Combahee discharges into Saint Helena Sound about midway between the cities of Charleston and Savannah.

The mean rise and fall of tides in Saint Helena Sound is 5.9 feet; at the railway crossing, or nearly 60 miles from the river's mouth, it is 2.5 feet, and the tidal influence is felt about 20 miles above that point.

The Little Salkiehatchie was not examined. It was found to be much obstructed by logs and bars even within a few miles from its mouth, and higher up it is known to be still more so.

The Big Salkiehatchie rises in Aiken County, South Carolina, about 20 miles from the boundary line, between South Carolina and Georgia, and flows through Barnwell County. Lower down it forms the boundary between Beaufort and Hampton Counties on the west and Colleton County on the east bank. The general course of the river is about south 40 degrees east.

The examination was commenced at the point where Toby's Creek enters the river, about 4 miles from Barnwell, and extended down to Hickory Hill, 12 miles below the Charleston and Savannah Railroad bridge, a total distance of about 156 miles. The examination was not carried further, as it was ascertained that from Hickory Hill to the sea the river was free and open for all purposes of traffic needed.

The course of the river is generally very tortuous. It flows through a low bottom land; its banks are about on the same level with the surface of the water at low stage, and are therefore overflowed during freshets, which, however, rarely rise higher than about 2½ feet. Between the point where the Little Salkiehatchie joins the river and the Charleston and Savannah Railroad bridge the banks rise to the exceptional height of 4 or 5 feet.

The river flows through a soft alluvial stratum from 6 inches to 2 feet thick, resting on a substratum of sand. The country which it drains is well timbered, yellow pine predominating, while hickory, white and red oak, ash, and cypress abound. Below the railroad crossing, the lands bordering on the river are devoted to rice culture.

The regimen of the river is extremely irregular. For a length of nearly 110 miles from Toby's Creek down it is unfit during low stages, for continuous navigation, even by rafts and the lightest kind of flatboats. At several places it practically ceases to be a stream, and be-

comes divided into numerous insignificant streamlets. This is notably the case in the reaches known as Weekly Sand Bar, 36 miles from Toby's Creek; Murdock's Sand Drags, 88 miles, and Weekly Sand Drags, 105 miles from Toby's Creek. These obstructions and the principal features of the river generally are briefly described in a table inserted below. The first 20 miles of the river below Toby's Creek are so much obstructed by logs and sand-bars that it was impossible to pass over this reach in a light canoe. At Hickory Hill there are two rows of piles, driven during the late civil war, which prevent boats from ascending to the junction of the two Salkiehatchies.

The river receives a number of small tributaries, the more important of which, Whippy Swamp, enters it from the west near Toby's Bluff, 84 miles below Toby's Creek.

Where the Salkiehatchie runs in one channel only, it shows a gradually increasing size. At a distance of 20 miles below Toby's Creek its width, at low-water, is only 25 feet, its depth 1 foot; about 50 miles below the same point the width is 60 feet and the depth 6 feet, while 50 miles lower down the same depth is found with a width of 90 feet. Just below the junction with the Little Salkiehatchie the width is 120 feet and the depth 5 feet; and the lowest reach of 12 miles examined showed widths of from 200 to 400 feet, and depths of from 8 to 12 feet.

At the time when the examination was made the river was at a low stage, and the currents were generally moderate and quite uniform, the velocity being about 2 miles per hour, except where affected by the tide in the lower reaches.

The improvement recommended by Captain Post comprises the removal of the pile obstructions at Hickory Hill; and the removal of logs and the shoals accumulated around them, on that portion of the stream between the railroad bridge and a point 5 miles above Toby's Bluff, a length of about 65 miles. Through the Weekly and Murdock sand-drags, cuttings would have to be made to create a channel of sufficient dimensions to permit the passage of rafts and flat-boats. The cost of these improvements, which it is thought would be comparatively permanent, not including contingent expenses, is estimated by Captain Post at $16,400.

A fair allowance for salaries of an assistant engineer and inspector would probably carry the estimate to $18,000.

It is not considered advisable to improve the river above the point indicated by Captain Post, as the expense would be very great in proportion to the benefit to be secured.

The improvement would undoubtedly aid the timber and lumber trade of the country adjacent to the river; and would perhaps develop some local movement in naval stores.

A few statistics are given in Captain Post's report.

Memoranda relating to obstructions and characteristic features of the Salkiehatchie River South Carolina, below Toby's Creek.

Name of place.	Distance below starting point.	Length of reach.	Remarks.
	Miles.	*Miles.*	
Toby's Creek ..	.....	.....	Starting point of examination.
		20	Greatly obstructed by logs and sand bars. Hercules Creek enters on left bank.
George Creek..	20		
		5	River 25 feet wide, 1 foot deep. Many logs and sand bars.
		1½	River divided into numerous streamlets. Bird Creek enters on left bank.
		3	River runs in one channel 50 feet wide; mean depth, 4 feet.
Beauford's B'ge	29½		
		4	River runs in one channel 50 feet wide; mean depth, 4 feet.
		2	River divides from time to time into streamlets 2 to 5 feet wide, 6 inches to 2 feet deep. Will Branch enters on right bank at end of reach.
		3	*Weekly Sand Bars;* river still more divided—79 different streamlets.
		9	River forms twelve channels, averaging 15 feet width, 4 feet depth.
River's Bridge.	47½	.....	River runs here in two channels; the largest is 60 feet wide, 6 feet deep.
		1	River forms but one channel.
		5	River is 60 feet wide, with good depth.
		6½	River again divides into many channels, the largest 10 feet wide and shallow. Priest's Branch enters on left bank.
		1	River forms again one channel 60 feet wide and 6 feet deep.
Braxton's Ford.	61		
		2	River forms again one channel 60 feet wide and 6 feet deep.
		10	River divides alternately into numerous streamlets and a good sized stream.
		11	River runs in one channel as a good sized stream.
Toby's Bluff ...	84	.....	Just below the bluff Whippy Swamp enters the river on right bank.
		3	River runs in one channel of increased size.
		¾	*Murdock's Sand Drags;* river runs in numerous insignificant channels.
		9¼	River forms one channel 90 feet wide 6 feet deep.
Niles's Bridge..	97		
		4	River forms one channel 90 feet wide 6 feet deep.
		4	River narrows down to 20 feet width and 6 feet depth.
		½	*Weekly Sand Drags;* river reduced to 12 feet width and less than 1 foot depth.
		¼	River forms a rapid in cut across bend; just below joined by five creeks.
		10¾	River gradually widens and deepens until it is 60 feet wide and 6 feet deep.
Junction with Little Salkiehatchie.	110½	.....	River 120 feet wide, 5 feet deep. Little Salkiehatchie 45 feet wide at its mouth.
		24	River is fairly wide and straight; in some places shoal and obstructed by logs. Banks bluffy. The following creeks enter it on the left bank: Sand's Run, Bull Brook, Black Creek, Boggy Cut Creek, Horse Tavern Creek.
Charleston and Savannah Railroad Bridge.	143½	.....	River 150 feet wide; mean rise and fall of tide, 2.5 feet.
		12	River very tortuous but free from obstructions. Width varies from 200 to 400 feet; depth from 8 to 12 feet. The banks are low.
Hickory Hill...	155½	.....	River obstructed by piles. Lower down to the mouth the river (Combahee) is entirely free. Terminal point of examination.

No appropriation has ever been made by the general government for improving the Salkiehatchie. It appears that many years ago the State government of South Carolina expended $30,000 in improving the river as high up as Toby's Creek. The narrow channel existing through the Weekly Sand Drags is believed to be a remnant of that improvement.

This work is located in the collection district of Charleston, S. C. Beaufort is the nearest port of entry.

The following papers are sent with this report:

1. Report of Capt. J. C. Post, Corps of Engineers, United States Army.
2. Sketch map of the Salkiehatchie River.

Very respectfully, your obedient servant,

Q. A. GILLMORE,
Lieut. Colonel of Engineeers, Bvt. Maj. Gen. U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF CAPT. JAMES C. POST, CORPS OF ENGINEERS.

UNITED STATES ENGINEER OFFICE,
Charleston, S. C., December 9, 1880.

COLONEL: In compliance with the instructions contained in your letter of September 14, 1880, I have to submit the following report of the examination of the Salkiehatchie River, South Carolina.

The Salkiehatchie River is formed by the junction of two rivers, the Big and Little Salkiehatchie, which unite about 82 miles from the coast. Its lower portion, that below the crossing of the Charleston and Savannah Railway, is generally called the Combahee, but it is not definitely known at what point the change in name takes place.

The examination was commenced at Toby's Creek on the Big Salkiehatchie and extended 156 miles to Hickory Hill Landing, a point about 12½ miles below the railroad bridge and 46 miles by the river from the coast. From Toby's Creek to within ½ a mile of the junction of the two rivers, a distance of about 119 miles, the river flows in a tortuous course through bottom lands 1½ miles to 2 miles wide. These consist of a stratum of soft alluvial matter and decayed vegetation from 6 inches to 2 feet in thickness, overlying a bed of sand which constitutes the bottom of the river. The banks are low, nearly on a level with the water at the low stage, and are overflowed every freshet. During these, which seldom exceed a rise more than 2½ feet, the increased current opens new channels through the unstable alluvial covering of the sand, and this continued from time to time has resulted in what are call sand drags or bars which completely obstruct the river at several points. Below the junction the river banks are generally bluffs of some considerable height, until the crossing of the railroad is reached. Here their character again changes and the land is low on both sides and planted very generally in rice. These plantations extend as far down as fresh water can be obtained, which is nearly to the mouth of the river.

DETAILED DESCRIPTION.

Toby's Creek to George's Creek—20 miles. This portion of the river was so obstructed that it was impossible to pass over it in a canoe. The country abounds in an excellent quality of yellow pine timber, of almost unlimited quantity and remarkably easy of access. It would not be practicable, however, to improve this section of the river sufficiently to float the rafts through without a very great expense and an additional yearly expenditure to keep up the improvements.

George's Creek to Beauford's Bridge—9½ miles. For a distance of 5 miles from George's Creek the river is 25 feet wide and 1 foot deep. Beyond this it divides into a number of streams, which unite about 3 miles above Beauford's Bridge. From this point to the bridge it is 50 feet wide, with an average depth of 4 feet.

Beauford's Bridge to River's Bridge—18 miles. The same width and depth continues for 4 miles, being kept open at all times for fishing purposes. In the next 2 miles the river divides from time to time into side channels, until there are some 79 of these, varying from 2 to 5 feet in width and from 6 inches to 3 feet in depth, through which all the water passes. This division is maintained for about 3 miles, and is called Weekly Sand Bars, after which the streams unite and form about a dozen channels, with an average width of 15 feet and a depth of 4 feet.

River's Bridge to Braxton's Ford—13½ miles. At this point the streams again unite into two channels, the largest of which is 60 feet wide and 6 feet deep. One mile below the bridge these two become one, and from thence for about 5 miles it continues about 60 feet wide, with a good depth. It then divides again, and the main channel is reduced to a width of 10 feet, with but little depth. This continues to within a mile of the ford, where it is rejoined by some of its scattered waters, and the river resumes its former size.

Braxton's Ford to Niles's Bridge—36 miles. Below the ford the river retains the same dimensions for about 2 miles, after which it is again divided and is alternately a good sized stream and a number of streamlets for about 10 miles. Beyond this it is a good sized stream again for 11 miles to Toby's Bluff, just below which Whippy Swamp, a stream of almost the same size as the Salkiehatchie, empties into it. From this junction to a place called Murdock's Sand Drags, a distance of 3 miles, the river has an increased width and depth. These sand drags are formed in a similar manner to the Weekly Sand Bars, and extend for ¾ of a mile. Below these the river increases in size to Niles's Bridge, where it is 90 feet wide and 6 feet deep.

Niles's Bridge to Junction—22½ miles. For 4 miles the river continues about the same, after which it again narrows to 20 feet in width, remaining the same in depth, for about 4 miles to the Weekly Sand Drags, where it is about 12 feet wide and less than a foot in depth. These continue about ½ a mile, the channel remaining the same.

Below the river remains still narrow, but increases in depth, with the exception of a few shoals, for a distance of 3 miles. At this point there is a rapid nearly ¼ of a mile in length.

This is formed by the river becoming filled with floating logs and *debris*, which lodge in a bend and obstruct the channel. The water then makes a new channel, connecting the extremities of the bend, and there is the same fall in this shorter channel as there was in the larger one around the bend, hence greater velocity. The rapid is also considerably obstructed by roots, logs, &c. Below this the river is joined by five small streams, and becomes 40 feet wide. Thence it widens till just above its junction with the Little Salkiehatchie, a distance of 3 miles, it becomes 60 feet wide and 6 feet deep, while at the junction it increases its width to 120 feet and is 5 feet deep. The Little Salkiehatchie is about 45 feet wide at its mouth.

Junction to Hickory Hill—36½ miles. The river continues wide and fairly straight, though in some places shoal and obstructed with logs, to the railroad bridge, a distance of 24 miles. From this point to Hickory Hill Landing it is free from all obstructions, and averages from 200 to 400 feet in width, and from 8 to 12 feet in depth. It is exceedingly tortuous, with low banks.

At Hickory Hill 2 rows of piles, driven during the late war, still obstruct navigation. Part of these are visible at low-water, and others have been broken or cut off by the raftsmen, and are always covered. They form a serious obstacle, and prevent boats or vessels from passing beyond this landing. With their removal and a comparatively small expenditure, light-draught boats could reach the junction of the two rivers.

Below Hickory Hill the river was not examined, as it was ascertained that the channel was free, and all that was needed for the commerce of that section.

The current of the river is about 2 miles an hour down to where the tidal influence is felt. The mean rise and fall, due to the backing up of the tide, is about 2½ feet at the railroad bridge. This action extends to within a few miles of the junction.

PRODUCTIONS OF THE SURROUNDING COUNTRY, AND PROBABLE COMMERCE OF THE RIVER, IF IMPROVED.

The principal production of the upper portion of this river is timber, and below the railroad crossing, rice. The marketable woods are pine, hickory, red and white oak, ash, cypress, and poplar. Above the junction the shipments now amount to 500,000 feet of timber, 200,000 feet of lumber, and 500,000 shingles yearly. This, it is estimated, would be increased to 10,000,000 or 15,000,000 feet of lumber and timber, if the river should be improved so as to allow the passage of rafts and flats to a few miles above Toby's Bluff. The production of naval stores would also probably be undertaken on a large scale.

Below the junction, as well as on the Little Salkiehatchie, large quantities of ranging timber, as well as lumber and shingles, are shipped yearly.

PROPOSED IMPROVEMENTS.

The improvements proposed consist of removing the pile obstruction at Hickory Hill and clearing the river of logs and the sand-shoals accumulated around them, from a point 5 miles above Toby's Bluff to the railroad bridge. This includes clearing the rapids mentioned as being midway between the junction and Nile's Bridge. Through the Weekly and Murdock's Sand Drags it is proposed to concentrate a sufficient amount of water into a single channel to accommodate rafts and flat-boats. This, it is thought, can be done at a slight cost and with a reasonable prospect of permanency.

The following is the estimate of the cost of these improvements, viz:

Clearing the river and concentrating the current from 5 miles above Toby's Bluff to junction	$11,000
Clearing the river from junction to railroad bridge	5,000
Removing pile obstructions at Hickory Hill	400
Total	16,400

The estimates are based upon removing the obstructions by hand during the low stages of the river. These generally occur during the summer.

The Little Salkiehatchie was not examined. From the best information that could be obtained it was learned that this river contained sufficient water for light-draught navigation for only a few miles, and even in this portion it is much obstructed by logs and bars. Some of the raftsmen prefer it, however, to the Big Salkiehatchie on account of its freedom from sand drags.

I am informed that about 30 years ago the State of South Carolina appropriated some $30,000 for the improvement of this river. The channel through the Weekly Sand-Drag is apparently all that remains of this improvement.

The field work of this survey was, by your direction, intrusted to Mr. J. H. Hallonquist.

This improvement is located in the collection district of Charleston. This river is its southern boundary. Charleston and Beaufort are the nearest ports of entry.

Very respectfully, your obedient servant,

JAS. C. POST,
Captain of Engineers.

Lieut. Col. Q. A. GILLMORE,
Corps of Engineers, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 24.

PORTLAND HARBOR.

LETTER

FROM

THE SECRETARY OF WAR,

RELATIVE

To the improvement of the harbor of Portland, Me.

JANUARY 8, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 6, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, copy of letter from Col. George Thom, Corps of Engineers, and copy of a letter received by Colonel Thom from the mayor and aldermen of Portland, Me., asking that an appropriation be requested for completing in part the removal of the Middle Ground in the lower part of Portland Harbor

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

UNITED STATES ENGINEER OFFICE,
Portland, Me., December 22, 1880.

GENERAL: I have the honor to transmit herewith a copy of a communication, dated the 12th instant, received by me from the mayor and aldermen of the city of Portland, Me., requesting that an appropriation be asked for completing in part the removal of the Middle Ground in the lower part of the harbor, the position and extent of which are shown on the accompanying sketch.

As this is the only part of the harbor that can be advantageously used for wharves and anchorage for ocean steamers and other large sea-going vessels, and as greatly increased facilities appear to be demanded by the foreign commerce now carried on and contemplated in connection with the Grand Trunk and other railroads centering in Portland from the north and west, the improvement proposed and asked for has now become a necessity too important to be longer deferred.

To remove this shoal (now having on it but 10 feet of water at mean

low-water) to a depth of 21 feet at mean low-water (giving about 30 feet at mean high-water), so as to make it uniform in depth with the contiguous part of the harbor, would require about 660,000 cubic yards of dredging, the estimated cost of which, at 22 cents per cubic yard *measured in situ*, is $145,200
Adding for engineering and other contingent expenses 14,800

160,000

Of this amount, there could be profitably expended during the next fiscal year $60,000.

Very respectfully, your obedient servant,

GEO. THOM,
Colonel of Engineers, Bvt. Brig. Gen., U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

CITY OF PORTLAND, *December* 12, 1880.

DEAR SIR: It is with great satisfaction we learn that you are about to have the much-needed dredging done in our harbor.

The increased size of vessels doing business here has made it an imperative necessity.

The great increase in the size of produce-carrying vessels, and the need of suitable wharfage for the immense craft, render it important that the Portland Harbor, being one of the few ports with sufficient depth of water, should be in a position to obtain its share of the traffic in shipping produce.

Vessels are built and others are in course of construction 600 feet long and of corresponding draught. Wharves are planned for the Grand Trunk Railway Company, to be constructed in our harbor, the terminus of the Grand Trunk Railway, and to complete the facilities for their accommodation largely increased dredging will be required, especially on the Middle Ground.

We therefore respectfully request that you will ask of the proper authorities an appropriation (additional to your unexpended balance) of at least $50,000 for the purpose above stated.

WM. SENTER, *Mayor.*
E. H. SARGENT,
THOMAS HASSETT,
BENJAMIN F. ANDREWS,
J. W. DEERING,
ALBION LITTLE,
CHARLES J. CHAPMAN,
Aldermen of Portland.

Gen. GEO. THOM,
U. S. Engineer Corps.

[First indorsement.]

OFFICE CHIEF OF ENGINEERS, U. S. A.,
January 3, 1881.

Copy respectfully submitted to the honorable the Secretary of War, with recommendation that it be sent to the Speaker of the House of Representatives for the information of the Committee on Commerce.

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Sketch of Portland Harbor, Me.

showing the location
of the Middle Ground
proposed to be removed.

Scale 1:20,000
1000 500 0 1000 2000 3000 ft.

U. S. Engineer Office, Portland, Me. Dec. 22. 1880
To accompany a letter of this date
to the Chief of Engineers, U. S. Army.

Geo. Thom
Colonel of Engineers
Bvt Brig. Genl. U. S. A.

CITY OF PORTLAND

Curtis Ship Yard
Pomroy's Rock
Fish Point
Great Eastern Wharves
Grand Trunk Wharves
Atlantic Wharf
Gate Wharf
Franklin W.
Custom-Ho. W.
Central W.
Harbor Commissioners Line
Brown's Wharf
B. & M. R. R. Wharf
21 ft. Contour.
Middle Ground
Dredged in 1869-72.
Bug Light.
Breakwater.
Fort Preble.
Fort Gorges
(27 ft. Contour)
Fort Scammel
Hog Island
Cushings I.
Ship Channel
Main Ship Channel
12 Dry Dock
Portland Bridge

Note.

The soundings are expressed in feet and are referred to the plane of m. low w.
The mean rise and fall of tides is 9 3/10 ft.

Improvements.

The Middle Ground; shaded in lines is proposed to be excavated to a depth of 21 feet at mean low water.

House Ex. Doc. No 24, 3rd Sess 46th Cong

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. No. 25.

CONNECTICUT RIVER.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Report of work on Connecticut River.

JANUARY 8, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 6, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, inclosed communication from the Chief of Engineers, dated the 3d instant, referring to his annual report for the fiscal year ending June 30, 1880, under the head of "Connecticut River, above Hartford, Connecticut, and below Holyoke," and submitting copy of the *special report* therein mentioned, from Lieut. Col. G. K. Warren, Corps of Engineers.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 3, 1881.

SIR: In the printed report of the Chief of Engineers for the fiscal year ending June 30, 1880, at page 75, under the head of "Connecticut River, above Hartford, Connecticut, and below Holyoke," it is stated that—

The improvement which has been suggested for this part of the river is a new canal from the head to the foot of Enfield Falls, or to Hartford, should the river channel below the falls be found to be less practicable. A revision, to accord with present prices, of the estimates for this project, heretofore submitted by the officer in charge, is being made, and will be the subject of a special report.

The special report therein referred to has been prepared by Lieut. Col. G. K. Warren, Corps of Engineers, and a copy is herewith submitted,

with recommendation that it be sent to Congress for the information of the Committee on Commerce.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

IMPROVEMENT OF CONNECTICUT RIVER, BETWEEN HARTFORD, CONNECTICUT, AND HOLYOKE, MASSACHUSETTS.

ENGINEER OFFICE, UNITED STATES ARMY,
Newport, R. I., December 13, 1880.

GENERAL: In the appropriation act approved June 14, 1880, there was an item for improving the Connecticut River, between Hartford and Holyoke, of $15,000, for the expenditure of which I was directed by instructions from Headquarters Corps of Engineers, dated June 17, to submit a project.

On June 21 I submitted the matter to General T. G. Ellis, the assistant engineer in charge of this work, for his views, it appearing to my mind that the amount was inadequate to accomplish anything desired that was not already provided for.

General Ellis consulted the Hon. George D. Robinson, member of Congress from Springfield, who represents the navigation interests concerned, and the conclusion was reached that before doing anything more there should be a revision of the estimates heretofore made for the canal project between Hartford and the pool above the Enfield Falls, for the purposes of perfecting the location, harmonizing the previous plans and revising the quantities, and adapting the various items of cost to the conditions of prices of labor and material at the present time. Such a project was submitted to the Chief of Engineers July 22, and approved July 28.

Authority was as soon as possible given to General Ellis to make these revisions, and to make such additional surveys and measurements as he deemed necessary for so doing.

These surveys he began on August 11, and completed them September 17. His report and maps were completed November 13, and are transmitted herewith. The maps, in 3 sheets, are on a scale of 400 feet to an inch.

General Ellis's report is so brief that, as a proper presentation of engineering conditions and requirements, and how to meet them, I may refer the reader to them without attempting more than a brief summary of the matters that are of a general character.

There is now a good navigable depth from Long Island Sound to Hartford of 8 feet at lowest stages of the Connecticut River.

From Hartford up to the Enfield Falls, about 11 miles, there is often no navigation even for vessels drawing 3 feet. The river in this distance flows through alluvial banks, and any project for improving this part so as to obtain the required depth is very expensive and uncertain.

The Enfield Falls extend along the river about 5 miles, and the water descends 33 feet in going this distance, so that over them there is no navigation whatever. Around these falls or rapids is a canal, on the right or west bank, with locks having capacity to pass boats 80 by 19

feet with a draught of 4½ feet. This canal is mainly for furnishing water-power, and is inadequate to any important navigation.

The Enfield Falls are in the State of Connecticut, and no great benefit to improving the navigation of the river can extend into Massachusetts until this obstruction is overcome.

Then, the river is susceptible of 8 feet navigation to Holyoke, 34 miles, above Hartford. There will probably be some outlay to be made between the rapids and Holyoke, not estimated for in General Ellis's report, to secure a draft of 8 feet.

The navigation can eventually be extended further up the valley of the river.

It is required in submitting reports upon surveys for improvements, to state the importance of the work and the commerce to be benefited, but it is very difficult to do so in this instance. Its main benefit will be to cheapen transportation upon bulky articles, such as coal, iron, and produce, into what is becoming a great manufacturing region, now only reached by railroads. It is probable that the parties interested in the work are much more able to do this than I am, and that they would rather look to it themselves than to have me delay a presentation of the engineering estimates, while it is further attempted here.

The canal estimated for is for navigation only, not for water power. These two objects are incompatible.

The width is fixed at 120 feet at the water line, but all the bridge abutments are to be made to allow a future widening to 150 feet. The draught in the canal is to be 10 feet, to allow the vessels to pass easily along it. There are to be 3 lift-locks placed together at the lower end, and 1 lift and guard lock at the upper end.

In submitting these revised estimates, the whole length of the work is divided into 3 nearly equal divisions, corresponding to the 3 map-sheets. Beginning at the lower end, numbers 1 and 2 extend up to about the foot of the rapids.

No. 3 extends along the rapids.

Estimate of cost of division No. 1	$669,460
Estimate of cost of division No. 2	268,719
Estimate of cost of division No. 3	384,626
	1,322,805

This work could probably be completed in three years if the money was furnished.

I would recommend that an appropriation of $450,000 be made to start it with.

The amount available now is about $16,900, being a little in excess of the last appropriation, by a remainder from a former one.

The proposed canal is in the Middletown, Connecticut, collection district, which is a port of entry.

The revenue collected there in the fiscal year ending June 30, 1880, is $51,425.

Very respectfully,

G. K. WARREN,
Lieutenant-Colonel Engineers, &c.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. THEODORE G. ELLIS, ASSISTANT ENGINEER.

HARTFORD, CONNECTICUT, *November* 13, 1880.

GENERAL: In accordance with authority received August 1, 1880, for making "an examination for the proposed route for a canal from the head of Enfield Falls to Hartford, and a revision of the estimates," such surveys as were necessary were commenced on the 11th of August, and were completed on the 17th of September.

The surveying party consisted of Mr. Charles L. Burdett, assistant engineer, in charge of the field work, Mr. L. H. Gager, leveller, and a party of chainmen, flagmen, etc., composed of Oliver Deming, Charles S. Bunce, James Given, Charles M. Ramsey, and John F. Givins.

After the completion of the field examinations, Mr. Burdett and Mr. Gager were retained until about the end of September in plotting and preparing the notes. The maps have been chiefly drawn by Mr. Wendell R. Curtis, assistant engineer.

The original surveys for a canal over this route were made in 1871 and 1872, when the prices for labor and materials were very high, and a high estimate was set upon the value of the land over which the canal would pass. The surveys of 1871 embraced only that part of the route from the head of Enfield Rapids to Warehouse Point, a distance of about 5 miles, and were made at the time with a view only of ascertaining the best route for a canal around the rapids, and not with any idea of a continuation to Hartford. Surveys were made on both sides of the river embracing all practicable routes, and it was only after a comparison of the advantages and disadvantages of the several plans then proposed, that a line upon the east bank of the river was shown to be the best and by far the most practicable.

This canal was intended to be of a depth of 8 feet with 6 feet of water on the miter sills of the locks. The river from below the Enfield Rapids to Hartford would not warrant making a canal of greater depth, as any improvements that might be made in the channel would not be likely to result in obtaining more than 5 or 6 feet of water at the most.

The natural result of the investigation at the rapids was to suggest the continuation of the canal down to some point below the shoal part of the river. Vessels drawing 8 feet or more were running daily to Hartford, and the river above the rapids was capable of improvement to a depth of 8 feet as far as Holyoke. The east side of the river, which had been found to be the best route for a canal around the rapids, presented very favorable ground for the contiuation of the canal to a point opposite Hartford, and a spur of high ground near the mouth of the Hockanum River furnished an excellent place for connecting with and entering the Connecticut without crossing the low meadows.

The surveys of 1872 commenced at Warehouse Point and were continued down to the mouth of the Hockanum River. An estimate was made of the cost of a canal between these points, giving it a depth of 10 feet with 8 feet on the miter sills of the locks, with a view to providing for the larger class of vessels which would enter it if commencing at the deep water at Hartford, and a correction was made of the estimate for the part of the canal opposite the rapids above to provide for the required increase in the depth of the canal and locks. This was considered to be sufficient at the time to show the character of the work and its probable cost. A report was made of the Enfield Rapids improvement on January 10, 1872, and a report upon the continuation of the canal to Hartford was made on May 13, 1873, which were printed in the Reports of the Chief of Engineers for the years named. And both were embraced in a general report of the improvements above Hartford, which will be found in the Report of the Chief of Engineers for 1878, Appendix B 14, together with maps which show the surveys as then made. These maps are upon a smaller scale than those transmitted with the reports, but illustrate the principal features of the projects.

DESCRIPTION OF THE RIVER.

As a full description of the river above Hartford will be found in the printed reports above referred to, a concise and general description of that part of the river embraced by the canal will only here be given.

The Enfield Rapids extend from Enfield dam a distance of about 5 miles down to opposite the villages of Windsor locks and Warehouse Point, the fall in this distance being about 33 feet. From the foot of the rapids to Hartford, the slope is less, being about 6.2 feet at low-water, and the river is navigable for boats of light draught.

Around the falls or rapids there is an old canal on the west side of the river, which is furnished with locks of 90 feet in length and 19 feet in width, and has a minimum depth of 4½ feet. This canal is now mostly used for manufacturing purposes, although what navigation there now is above Hartford passes through it. There is at the present time no navigation in the channel over the rapids, although there was formerly an opening in the dam for that purpose.

From Windsor locks to Hartford, the channel of the river is obstructed with bars, some of the worst of which have been improved by the United States Government during the past 8 years, so that there is now about 3 feet depth between Hartford and the foot of the old canal.

Before the government improvements were made, there was about one foot of water only upon some of the bars; the river was then but little used for navigation, but since the improvements, particularly during the past 2 seasons, there has been a considerable amount of transportation by water to Springfield and Holyoke, Massachusetts, consisting chiefly of coal and other heavy freight.

GENERAL DESCRIPTION OF THE ROUTE.

On the preceding examination of the Enfield Rapids portion of the canal the survey was made of the whole river embracing both banks, and the canals of the different projects were located on the map and the quantities for the estimates taken from the cross-sections, and other data obtained from the general survey. On this account, and the fact that the two parts of the canal as now proposed were for different depths, it was thought best to run a new line for the canal, so as to take advantage, as far as possible, of the information previously obtained, and note any new features that might present themselves. It was also thought that the route could be improved in some places so as to diminish the amount of work.

It is proposed to take the water at the upper end of the canal from the present level above Enfield dam at its lowest stage. This dam formerly had an opening through the middle 150 feet wide, which was left for the passage of rafts and such boats as might deseend at high-water. At the lowest stages of the water it fell below the top of the dam and passed through this opening, sometimes reducing its level to about a foot below the crest. At the present time, however, this opening is filled with stone nearly or quite up to the level of the crest of the dam, so that the water does not fall to the same level at the lowest stage.

This was particularly observed at Springfield, Mass., during the past extremely dry season, when the water did not reach the lowest point by about 1 foot. The assumed level of the upper end of the canal is taken at 39.20 feet above the Hardford zero, or lowest water at that place. This can be taken without any great alteration of the existing dam or affecting the height of the water in the old canal on the other side of the river.

A lock for the entrance of vessels into the canal at all stages of the water will have to be constructed upon the east bank of the river, and suitable gates provided to supply the canal and maintain it at the proper level. The height of water on the dam in freshets is about 12 feet.

It is proposed to have the entrance gates for the supply of water independent of the lock, as more than the ordinary lock service will be required for the waste in the canal, and the lock sluices cannot be so conveniently regulated.

At the upper end of the canal, for a distance of about $1\frac{1}{2}$ miles, the canal is intended to be partially embanked from the bed of the river, and opposite King's Island about $\frac{1}{2}$ a mile is to be constructed in the same manner. The high and rocky bank makes this the cheapest construction. The embankment will be carried up to above the height of the highest freshets, and have the sides thoroughly protected with rock. It is intended to make this 2 feet in thickness upon the outside of the embankment, and $1\frac{1}{2}$ feet upon the top and inside.

The bed of the river above and below the dam is to be excavated to obtain the depth of 10 feet as proposed. The depth of this excavation is shown on the profile of the route.

The canal would pass under the east span of the old Enfield bridge, leaving a clear height of about 19 feet above the water. This would be sufficient for boats without masts, and no change would be required in the bridge; but, as it is proposed to make the passage of all vessels of suitable draft coming to Hartford, provision is made in the estimates for a suitable draw at Enfield bridge.

With the exception of that part of the canal embanked from the river, the line follows the bank just back of the water down to Red Hill below Warehouse Point. This part presents a large amount of rock cutting, and is the most expensive portion of the route.

Below Red Hill, at Prior's Creek, the line runs farther back from the river along the edge of the high ground, where it meets the meadow level, at a distance of from 2,000 to 4,000 feet from the river bank. This part of the canal can be easily and cheaply built and almost any desired level can be obtained by a careful location, greatly reducing the quantities of excavation and embankment shown by the surveyed line.

The present estimates, however, are based upon the quantities shown by the profile of the line surveyed. Owing to the greater part of the route being upon a side-hill slope, the line can be located so as to balance the cutting and filling with short hauls,

and an approximation to such a line is shown by the double red lines upon the map, the actual survey being shown by the red dotted line. A line of survey was run through a hollow, back of Warehouse Point, and also back of Red Hill, to ascertain if an advantage could not be gained by keeping back from the river. A route can be obtained there at about the same cost as the route shown on the map, if it is desired to keep back of the immediate river bank through Warehouse Point. A careful location would be required to show which would be the cheapest. The route along the river is supposed to have some advantages in not cutting off the roads of access to the village, so that it has been adopted in the estimates. At the lower end of the canal it enters the Hockanum River about ½ a mile from the Connecticut. At this place there is a natural spur so situated that the canal can reach its terminus upon the high ground and drop at once by 3 locks to the river level, without crossing the meadows. The lower end of the Hockanum from the entrance of the canal to the Connecticut River, turns nearly southward, and at high-water is protected by the spur before mentioned. This will have to be excavated and straightened so as to form an entrance basin for the canal. It will serve as a safe and protected harbor for vessels awaiting their turn to pass through the canal, and also as a winter harbor for vessels caught in the river when it freezes over in the winter, as they would be protected from the descending ice in the spring.

The mouth of the Hockanum appears to be the only feasible place for the proposed canal to enter the Connecticut River. It is about 1¼ miles below the landing at Hartford, but the canal cannot enter directly opposite that place on account of being obliged to cross the meadows for about three-quarters of a mile at right angles to the current which flows over the meadows at high-water. The canal would be submerged in freshets, and be unprotected from the ice, which sweeps down with great force in the spring.

Above Hartford the channel of the river is crossed by two bridges, and is obstructed by bars immediately above the first bridge, making it impracticable to enter at a point higher up.

The mouth of the Hockanum is accessible at all stages of the river, and its banks are wooded and well defined. It is at present navigable up as far as the proposed entrance of the canal, and serves in a limited way as a winter harbor for vessels, where they lie safely and protected from ice.

Very few crossings are required on the proposed canal. The route runs generally between the river and the nearest highway, and only requires provision for access to the bridges and ferries, and for such farm crossings as may be necessary to reach the meadow lands cut off by the canal. The principal highways that will be required to be carried over the canal are the road to Enfield Bridge, where a draw will have to be provided, the crossing of the New York, New Haven and Hartford Railroad, the ferry road at Warehouse Point, the main road at Red Hill, the Connecticut River Quarry Company's railway to the river, the road to Bissell's Ferry near the Scantic River, and four roads in East Hartford. These will all require permanent structures with draws and will be at or near the grade of the tow-path. In addition to these, six farm bridges of a less expensive character will be required. All of these bridges are intended to swing upon a central pier with clear openings of 50 feet on each side.

Few streams of any importance are crossed. The Scantic River is the largest, and the Podunk River is the next in size; the others are smaller and are mere brooks. It is proposed to carry them all under the canal by suitable arches and culverts.

SLOPE AND AMOUNT OF WATER REQUIRED.

In the proposed plan the canal is supposed to be for navigation only. A slope sufficient only for supplying the waste and the amount of lockage is assumed as the most favorable for navigation, as it produces the least amount of current, and the amount of water required to supply the canal and maintain its slope will be a minimum.

The quantity of water required in the canal for the purposes of navigation will be about as follows:

	Cubic feet per second.
For lockage	200
For filtration and leakage	167
For evaporation	3
Total	370

This amount provides for a lockful of water every 10 minutes, a filtration and leakage of 10 cubic feet per second per mile, and an evaporation of .025 of a foot in 24 hours. The quantity lost by filtration and leakage would probably be much more than this for the first year, but after a certain time the deposit of mud upon the banks and bottom of the channel would greatly diminish the loss from this cause.

The slope assumed for the surface of the water in the canal is .00002 of the length. This is about 1½ inches per mile.

This is a somewhat greater inclination tban is required to supply the quantity of water above stated, and allows for all contingencies and obstructions in the bed of the canal. It would give a mean velocity of about 1.19 feet per second in a straight and smooth channel of the section proposed, or a discharge of 1,250 cubic feet per second. In the proposed canal, however, there will be the usual obstructions to the flow of the water resulting from the accidental irregularities of construction, the abutments and piers for the bridges, any constructions which diminish the water-way, and especially the resistance offered by aquatic plants. These, with the small loss of head due to the curves, will probably reduce the mean velocity to about .75 of a foot per second, corresponding to a discharge of 787.5 cubic feet per second.

The slope of the canal has been assumed slightly in excess of the requirements for the purposes of navigation to provide for all contingencies that may arise, and if it should be found that a less amount of water would be desirable, the slope of the water can be allowed to diminish by rising at the lower end and falling at the upper, even to becoming level, without damage to the canal.

The total amount of fall from the upper to the lower end at the proposed inclination is 1.76 feet.

DIMENSIONS OF THE CANAL.

The total length of the canal from the dam at Enfield to the point where it enters the Hockanum River, is 16.77 miles. From the latter point to the Connecticut River is .53 of a mile, making the whole length 17.30 miles.

In the previous estimates the width of the canal at the water-line was assumed at 150 feet, but this has been reduced in the present estimates to 120 feet, which will be ample for the navigation for some time to come and materially reduces the cost. It is proposed to build all the bridges with the same width between the abutments as before estimated, so that the canal can be widened, if hereafter found desirable. The water in the canal is to be 10 feet in depth, with 8 feet depth on the miter sills of the locks. The slopes of the cuttings and embankments are assumed at 1½ horizontal to 1 vertical. This slope will be somewhat varied in the execution of the work, according to the material met with, but is sufficiently near for the purpose of an estimate.

Upon the embankments the tow-path is intended to be 2 feet above the level of the water and 10 feet wide on top. In the cuttings a berme of 15 feet is allowed at the tow-path on each side of the canal.

This is for the purpose of allowing space for ditches, and for a short space with a flatter slope at the water line.

The channel in the bed of the Hockanum River, from the foot of the locks to the Connecticut, is intended to be 150 feet wide and to be excavated to a depth of 8½ feet below the lowest water, which gives a depth of 10 feet at the ordinary summer level of the river.

LOCKS.

There is to be 1 lock at the upper end of the canal to admit vessels when the water is above the ordinary summer level. This guard-lock will require to have a lift of 12 feet, and is intended to be 50 feet wide and 200 feet long between the quoins.

In connection with this lock there will be a bulkhead across the upper end of the canal, provided with suitable gates to admit water and regulate the supply to the canal.

At the lower end of the canal there will be a flight of 3 locks, which, by the present survey, can be placed close together in preference to the plan formerly adopted, of separating them. This arrangement is preferred as giving a better and more definite entrance to the canal at the highest stages of the river, when one or more of the locks will be submerged.

The locks at the lower end of the canal are to be of the same size and depth as the guard-lock at the dam, viz, 200 by 50 feet, with a depth of 8 feet on the miter-sills. The 2 upper locks are intended to have lifts of 11.5 feet each, and the lower one a lift of 14.44. This is for the purpose of equalizing them at the lower stages of the river. The masonry of the gate-chambers, quoins, miter-sills, and coping is supposed to be of cut granite, with side walls and backing of coursed freestone rubble, all laid in hydraulic cement. The floor of the locks is estimated as being of concrete.

The lock gates are supposed to be of the ordinary construction, with white oak timbers and pine sheathing, and to be opened and shut by capstans. The supply of water being ample, the gates can be easily arranged to be operated by means of turbines without much additional expense.

ARCHES AND CULVERTS.

At the following places arches will be required to carry the streams under the embankment, viz:

At Scantic River, two 20-foot arches.

At Podunk River, one 20-foot arch.
At Stoughton's Brook, one 10-foot arch.
At Boyle's Brook, one 10-foot arch.
At Prior's Creek, one 6-foot arch.
At Red Hill Brook, one 6-foot arch.

The smaller streams are intended to be carried under the embankment by box culverts of from 2½ to 5 feet in width.

The arches are to have the abutments, wings, and backing of coursed freestone rubble with cut freestone corners, coping, and arch courses. The box culverts are to be of coursed freestone rubble with granite covers.

All of the foregoing masonry is to be laid in hydraulic cement.

BRIDGES.

It is proposed to make the faces of the abutments of the bridges in line with the edges of the surface of the water in the canal, or 120 feet apart, and to place a circular pier in the middle of the waterway, so as to provide for a swing bridge of at least 50 feet clear opening on each side of the central pier. The abutments and piers are intended to be of coursed rubble with cut corners, coping, and bridge seats all of freestone.

The bridges are intended to be of iron. Those for the main roads to be 20 feet wide and those for the farm crossings 10 feet wide and correspondingly lighter.

WASTE WEIRS AND RETAINING WALLS.

The masonry of the waste weirs is to be of coursed rubble with cut corners and coping similar to that described for the bridge abutments.

The retaining walls at the ends of the locks and other places where necessary are to be built of rubble masonry laid in hydraulic cement.

MATERIALS.

From the upper end of the canal to the Scantic River, the earth to be excavated consists mostly of a clayey loam. Beneath this, from Enfield dam to Red Hill, just below Warehouse Point, is rock, for which an ample allowance is made in the estimates. Below Scantic River the material becomes more sandy, and for a long distance at the lower end of the canal it is almost a pure sand.

It is proposed to make the embankments entirely of the material excavated, and to build them up in layers, slightly concave, and well compacted by the teaming over them, in preference to making puddled walls in the interior, even where the material is entirely sand. The expedient of constructing a puddled wall in a dam or embankment is very expensive, and experience has shown it to be of extremely doubtful value; and it is believed that the best modern engineering practice is to make the whole embankment of uniform material, properly brought up in consecutive layers. Canals formed in very porous material, like coarse gravel, soon become tight from the deposit of silt from the water. The waste that would occur from filtration during the first few years in a canal constructed as proposed, would be of little importance, as there would be an ample supply of water and a sufficient slope to maintain the proper depth of water.

A suitable red sandstone for the rubble masonry can be obtained in the vicinity of the work. The cut blocks for the corners and coping, and for the arches, can be obtained from the quarries at East Windsor, where large blocks of excellent quality can be procured. This stone can also be obtained at the Portland quarries, near Middletown, Conn., and transported by water to near where it will be required for use.

The granite used in the locks, it is thought, can be procured of suitable quality from the qurries near the mouth of the Connecticut River.

There is also excellent granite at Westerly, R. I., and at Leet's Island, Conn., where large and fine blocks can be quarried.

The timber for the lock-gates, &c., can be best procured from Vermont and New Hampshire, and brought down by railroad to where it is to be used.

The iron work for the bridges and locks would probably be furnished by some of the large contracting companies which furnish bridges and similar constructions. It could be procured at Springfield or Hartford, where there are suitable works for its manufacture.

ESTIMATES.

For convenience in making the estimates, the whole route has been divided into three divisions, embracing about one-third of the whole length in each. These divisions are shown on the three sheets of the accompanying map.

ESTIMATE, DIVISION NO. 1.

448,000	cubic yards earth excavation, at 15 cents	$67,200
98,000	cubic yards excavation in Hockanum River, at 25 cents	24,500
7,900	cubic yards excavation for foundations, at 40 cents	3,160
2,500	cubic yards clay puddling, at $1	2,500
9,470	cubic yards rubble masonry in locks, at $8	75,960
2,100	cubic yards cut stone in locks, at $14	29,400
1,660	cubic yards rubble in arch abutments, at $6	9,960
810	cubic yards arch masonry, at $12	9,720
40	cubic yards cut stone in arch abutments, at $10	400
1,560	cubic yards rubble in bridge abutments, at $6	9,360
160	cubic yards cut stone in bridge abutments, at $10	1,600
200	cubic yards rubble masonry in waste weirs, at $6	1,200
40	cubic yards cut stone in waste weirs, at $10	400
620	cubic yards culvert masonry, at $5	3,100
2,700	cubic yards concrete, at $3	8,100
4	pairs of lock-gates	12,000
3	waste weirs	1,000
4	swing road-bridges, superstructure	20,000
3	swing farm-bridges, superstructure	9,000
	Coffer-dams, &c	4,000
	Land damages, 5.73 miles, at $10,000	57,300
	Engineering and contingencies, 10 per cent	34,966
	Total	384,626

ESTIMATE, DIVISION NO. 2.

735,000	cubic yards earth excavation, at 15 cents	110,250
7,600	cubic yards excavation for foundations, at 40 cents	3,040
2,660	cubic yards rubble in arch abutments, at $6	15,960
1,620	cubic yards arch masonry, at $12	19,440
80	cubic yards cut stone in arch abutments, at $10	800
1,050	cubic yards rubble in bridge abutments, at $6	6,300
110	cubic yards cut stone in bridge abutments, at $10	1,100
2,120	cubic yards culvert masonry, at $5	10,600
2	swing road-bridges, superstructure	10,000
3	swing farm-bridges, superstructure	9,000
	Coffer-dams, &c	1,000
	Land damages, 5.68 miles, at $10,000	56,800
	Engineering and contingencies, 10 per cent	24,429
	Total	268,719

ESTIMATE, DIVISION NO. 3.

468,600	cubic yards earth excavation, at 20 cents	93,720
150,000	cubic yards rock excavation, at $1	150,000
61,000	cubic yards rock bottom excavation, at $2	122,000
3,400	cubic yards excavation for foundations, at 40 cents	1,360
16,300	cubic yards rock in channel above dam, at $4	65,200
1,200	cubic yards clay puddling, at $1	1,200
3,160	cubic yards rubble masonry in guard lock, at $8	25,280
730	cubic yards cut stone in guard lock, at $14	10,220
350	cubic yards rubble in arch abutments, at $6	2,100
120	cubic yards arch masonry, at $12	1,440
10	cubic yards cut stone in arch abutments, at $10	100
780	cubic yards rubble in bridge abutments, at $6	4,680
75	cubic yards cut stone in bridge abutments, at $10	750
600	cubic yards rubble in railroad-bridge abutments, at $6	3,600
200	cubic yards cut stone in railroad bridge abutments, at $10	2,000
350	cubic yards rubble masonry in gate head, at $6	2,100
100	cubic yards cut stone in gate head, at $14	1,400
150	cubic yards rubble masonry in 2 waste weirs, at $6	900
30	cubic yards cut stone in 2 waste weirs, at $10	300
1,020	cubic yards culvert masonry, at $5	5,100
2,900	cubic yards retaining walls, at $4	11,600
900	cubic yards concrete, at $3	2,700

1 swing-bridge for railroad, superstructure	$8,000
3 swing road-bridges, superstructure	15,000
2 pairs of lock-gates	6,000
2 waste weirs	700
Gates at entrance to canal	1,500
Gate-house	750
Alteration of dam at Enfield	5,000
Coffer-dam, &c	5,000
Land damages, 5.89 miles, at $10,000	58,900
Engineering and contingencies, 10 per cent	60,860
Total	669,460

SUMMARY OF TOTAL COST OF CANAL.

Division No. 1	$384,626
Division No. 2	268,719
Division No. 3	669,460
Total	1,322,805

LIST OF BENCH-MARKS USED ON THE SURVEY.

The base for the heights of the bench-marks is low-water mark at Hartford, or zero of the gauges at the toll bridge and at the steamboat wharf.

Top of freestone foundation at the northeast corner of house on the southwest corner of Wawarme avenue and Van Dyke avenue, Hartford	31.540
Cut on east side of an ash tree near the mouth of the Hockanum River, west bank, 400 feet from the Connecticut River and 100 feet from the Hockanum River	14.733
Cut on the west side of an elm tree near the northwest corner of Jennings' collar shop, in East Hartford	32.613
Cut on maple tree 1,270 feet west of southwest corner of a road to the meadows, said corner being about 2,650 feet north of Podunk River bridge on main road in South Windsor	34.055
Cut on south side of maple tree, 520 feet west of the main road and 1,230 feet south of Stoughton's Brook, in John Moore's lot, South Windsor	23.344
Cut on south side of hickory tree, 210 feet northwest of the northwest corner of tobacco shed in Charles Wells's lot, East Windsor	50.704
Cut on the northwest side of a large hickory tree, about 900 feet northeast of the mouth and 100 feet west of Prior's Creek, East Windsor	27.152
Northeast corner of underpinning stone at the northeast corner of red tobacco shed belonging to J. C. Bassinger, on the west side of river road at Warehouse Point	29.810
Top of southwest corner of abutment of New York, New Haven and Hartford Railroad bridge at Warehouse Point	61.900
Top of northeast corner of north end of capping to east wall of brick arch bridge, over second road south of Thompsonville Station on New York, New Haven and Hartford Railroad, being about 300 feet south of the southwest corner of said station	76.663

MAPS ACCOMPANYING THIS REPORT.

Accompanying this report is a map on 3 sheets showing what is considered the most feasible location for the canal. It has been prepared from recent surveys and examinations together with the latest surveys of the river above Hartford. This map is upon a large scale, 400 feet to an inch, and contains a profile of the route as actually surveyed. Reference is also made to sheets 1, 2 and 3, of the report of the surveys above Hartford, printed in the Report of the Chief of Engineers for 1878, upon a reduced scale, Appendix B 14, "Warren and Ellis's Reports on the Connecticut River above Hartford," plates I and II. These reduced sheets show generally the route of the canal, being marked "proposed canal," and "No. 2," on sheet 3, and is the only route shown on sheets 1 and 2.

All of which is respectfully submitted.

THEO. G. ELLIS,
Civil Engineer.

Gen. G. K. WARREN,
Lieutenant-Colonel of Engineers, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 26.

IMPROVEMENT DAMAGES OF THE FOX AND WISCONSIN RIVERS.

LETTER

FROM

THE SECRETARY OF WAR,

RELATIVE

To the damages caused by the improvement of the Fox and Wisconsin Rivers.

JANUARY 8, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 6, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, copy of letter, dated the 23d ultimo, from Maj. D. C. Houston, Corps of Engineers, to the Chief of Engineers, and accompanying forms of provisions relating to the ascertainment of damages caused by the improvement of the Fox and Wisconsin rivers, and to recommend that provision for the ascertainment of damages caused by said improvement be inserted in the next river and harbor act.

ALEX. RAMSEY,
Secretary of War.

THE SPEAKER
of the House of Representatives.

UNITED STATES ENGINEER OFFICE,
Milwaukee, Wis., December 23, 1880.

GENERAL: I have the honor to forward herewith two forms of provisions, one of which, or one covering the case, I request may be inserted in the river and harbor bill.

The act of March 3, 1875, entitled "An act to aid in the improvement of the Fox and Wisconsin Rivers," provided that the value of lands required for the works of improvement or of damages caused by said works, should be ascertained in the mode provided by the laws of the State in which the property lies. The law of the State of Wisconsin bearing on this subject, was as follows:

[Laws of Wisconsin, 1874, chapter 291.]

An act to authorize the governor of the State to convey land to the United States for the purpose of erecting light-houses and other aids to navigation, and for other purposes.

* * * * * * *

SEC. 2. In case the lands of any person have been overflowed, or injured, or taken, or if it shall be found necessary or proper hereafter to overflow, injure, or take, the bonds [lands] of any person for, or by reason of the construction of any dam, bridge, lock, or pier, or the repair or enlargement thereof, or the construction, repair, or enlargement of any canal or other works by the United States Government in the improvement of any harbor, river, or stream of water in this State, the compensation for damages sustained by the owner or owners of the lands overflowed, injured, or taken as aforesaid, may be ascertained, determined, and paid, in the same manner as prescribed in chapter 119 of the laws of 1872, entitled "An act in relation to railroads and the organization of railroad companies," approved March 22, 1872, for acquiring title to lands by railroad companies, and all the provisions of said act may apply in case of the overflowing, injury, or taking of lands by the United States Government for the purpose aforesaid, which are properly applicable thereto.

SEC. 3. This act shall be in force from and after its passage and publication.

Approved March 12, 1874.

Upon the revision of the statutes of Wisconsin about three years since, this law was left out (by mistake it is supposed) and virtually repealed, so that the act of March 3, 1875, is now inoperative. It is in order to remedy this mistake that the inclosed provisions are submitted. They were drawn up by Hon. O. B. Thomas, special assistant attorney-general for the United States. Form No. 1 corresponds to similar provisions in former river and harbor acts.

I am, general, very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

FORM NO. 1.

For the improvement of the Wisconsin and Fox Rivers, in the State of Wisconsin, ——— dollars: *Provided*, That the sum of twenty-five thousand dollars thereof may be expended for land required for canals, cut-offs, and other works of improvement, and other injuries to private property caused by the dams and other works erected or constructed by the United States in the prosecution and maintenance of said improvement.

The value of such land and the amount of such damages shall be ascertained and determined by agreement, or in accordance with the laws of Wisconsin for acquiring land by the right of eminent domain for the use of railroads. All such legal proceedings to be commenced and carried on in the United States courts.

FORM NO. 2.

For the improvement of the Wisconsin and Fox Rivers, in the State of Wisconsin, ———: *Provided*, That all injuries or damage heretofore or hereafter occasioned to individuals by overflowing or taking their lands in the prosecution or maintenance of the improvement of the Wisconsin and Fox Rivers, in the State of Wisconsin, by the United States, or when it shall hereafter become necessary to take or injure any lands in the prosecution or maintenance of such improvement, shall be ascertained and determined by agreement between the officer in charge of said improvement and the owner or owners of any such lands so overflowed, taken, or required to be taken, subject to the approval of the Secretary of War. If such agreement cannot be arrived at, such injuries or damage shall be ascertained by proceedings in the United States circuit court for the district in which such lands are situate, such proceedings to be conducted in such court in the mode, as near as may be, provided by the laws of the State of Wisconsin for acquiring land by the right of eminent domain for the use of railroads, and when ascertained, either by such agreement or such proceedings in court, shall be in full

for all time for flowing, injuring, or taking any such lands. The interest of the United States in such legal proceedings shall be represented in the manner provided by an act of Congress entitled "An act to aid in the improvement of the Fox and Wisconsin Rivers in the State of Wisconsin," approved March 3, 1875. That the sum of twenty-five thousand dollars, a part of the appropriation now made, may be applied in payment of such damages.

[First indorsement.]

OFFICE CHIEF OF ENGINEERS, U. S. A.,
January 3, 1881.

Copy respectfully submitted to the honorable the Secretary of War, with recommendation that it be sent to the Speaker of the House of Representatives for the information of the Committee on Commerce.

It is very desirable that provision be made for the ascertainment of damages caused by the works for improvement of the Fox and Wisconsin rivers, and that it be inserted in the next river and harbor act.

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

○

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC No. 27.

CALAIS BREAKWATER.

LETTER

FROM

THE SECRETARY OF WAR,

RELATIVE

To the breakwater near Calais, on the Saint Croix River.

JANUARY 8, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 7, 1881.

The Secretary of War, in answer to the resolution of the House of Representatives of the 15th ultimo, calling for information as to "the present condition of the breakwater about four miles southerly from the city of Calais, on the Saint Croix River, the necessity of its immediate repair to prevent its destruction, and the probable cost thereof," has the honor to transmit herewith a communication from the Chief of Engineers, dated the 3d instant, and accompanying copy of report from Col. George Thom, Corps of Engineers, on the subject, which contain the information desired.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 3, 1881.

SIR: I have the honor to return herewith the resolution of the House of Representatives of the 15th ultimo, requesting the Secretary of War "to inform the House of the present condition of the breakwater about four miles southerly from the city of Calais, on the Saint Croix River, the necessity of its immediate repair to prevent its destruction, and the probable cost thereof," and to transmit a copy of the report on the subject from Col. George Thom, Corps of Engineers, which will furnish the desired information.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

BREAKWATER IN SAINT CROIX RIVER, MAINE.

UNITED STATES ENGINEER OFFICE,
Portland, Me., December 23, 1880.

GENERAL: I have the honor to acknowledge the receipt of Department letter of the 18th instant, inclosing for my information and for a report a resolution of the United States House of Representatives, requesting information as to the "present condition of the breakwater about four miles southerly from the city of Calais, on the Saint Croix River, the necessity of its immediate repair to prevent its destruction, and the probable cost thereof."

The breakwater above referred to consists of a crib-work *pier*, balasted with stone, built in three parts, upon the ledge on the Maine side of the channel, about 5 miles below the bridge at Calais, Me., the plan and location of which are shown on the accompanying sketch. This pier was built many years ago, for the purpose of preventing vessels in descending the river from being thrown upon the ledge by the strong tidal current which sets directly upon the ledge, greatly endangering the safety of vessels. Hitherto this pier has answered its purpose in a satisfactory manner; but it has become so much dilapidated as to necessitate its being at once *rebuilt*. Last season I had an examination made of its condition, the results of which are stated in the accompanying report of my assistant engineer, Mr. A. C. Both.

The decayed and otherwise weakened condition of the work would make it unadvisable to attempt to *repair* it; and the only portion of the material of which it is built that could be used in its reconstruction is the stone ballast, of which it is believed there is sufficient at hand. Exposed as this pier is to the heavy shocks of floating and jammed ice, as well as of vessels thrown upon it by the strong current, it is recommended that it should be built in a much stronger manner than before and of less perishable materials, the estimated cost of which is $4,000.

Respectfully submitted.

GEO. THOM,
Colonel of Engineers, Bvt. Brig. Gen., U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. A. C. BOTH, ASSISTANT ENGINEER.

MOOSE-A-BECK HOUSE,
Jonesport, Me., November 1, 1879.

GENERAL: I have the honor to submit herewith a report upon the condition of the pier at the "Ledge," in accordance with verbal instructions received from you at Eastport, Me.

I proceeded to the place October 27, by United States revenue cutter Levi Woodbridge, Captain Warner, who kindly furnished me also with a boat and two men.

The pier is located just above the so-called "Ledge" in Saint Croix River, Maine, about 4 miles below Calais, Me. The river at this place makes a sharp turn (see inclosed sketch), and at the ebb-tide the current sweeps in the direction of the small arrows, directly on the "Ledge." To prevent vessels from being driven on the Ledge at ebb-tide, and to partly divert the direction of the current, seems to have been the cause of building this pier. In my opinion, it answers its purpose well in both directions, and therefore it would be advisable to repair or rebuild the same before its entire destruction. The inclosed sketch shows a side view and end view, drawn to a scale of 1:400. The three piers are built of 12-inch square spruce timbers, are 17 feet wide on top, and their southerly face has a batter 1′ on 6′, the other faces being plumb. They are 35 feet apart and connected on top by six braced stringers, and planked over. The western pier is 43 feet long, and the two others 31 feet long each, and are,

on an average, 24 feet high. At the time the examination was made there was about 2 to 3 feet of water at the down-river or southerly side, and about 6 feet of water at the up-river or northerly side, the time being about two hours before low-water. The sides of the piers are constructed simply by fastening three 12-inch square timbers on top of each other, the corners being made by cutting each timber one-half. Twelve inches square braces or ties run only from the up-river face to the down-river face, and the westerly and easterly sides of the piers are not braced or tied at all, but depend altogether upon the fastenings at the corners. It is for this reason that the western corner of the western pier is entirely broken away, letting a large part of the stone ballast run out. All the timbers from 8 feet below the top to low-water mark are gone, and also those on the up and down river faces of this pier are torn away for a length of about 15 feet. The corner of this pier, marked "d" on sketch, is also badly damaged, and but for the vertical posts (sustaining the stringers) running down the whole height of the pier, this side (not being tied) would have been torn away some time ago. *All* the timbers above high-water mark, as well as the planking on top, belaying posts (four on each pier), and the stringers running from one pier to the other are entirely rotten, and it is quite unsafe for a single man to go on top of these piers. I had to feel my way cautiously, and would break through the planking unless a floor timber prevented it. The piers below high-water mark are in a tolerably good condition, except the up-river sides of the piers, where the ice has worn them away to one-half their thickness, and many timbers are broken. The timbers here are all splintered to such a degree that no fastening will hold in them, otherwise it might be well to strengthen and protect them from further wear and tear by oak plank sheathing. The ties are put in every alternate course, and about 7 feet apart. It is my opinion that the western pier will have to be rebuilt entirely, and the middle and eastern piers will last only a few years longer at best.

In case it should be decided to rebuild all the piers, it would be well to locate them next to the old ones, in which case the ballast could be removed and deposited into the new piers by handling it only once. All repairs contemplated to be made on these piers would require the ballast to be removed nearly entirely. The ballast consists of small rocks, such as a man can lift, and as there are no compartments inside of the piers, they being merely a large box, the ballast would roll down and out of any place where timbers could be removed to be replaced by new ones. The repairing of these piers would, therefore, in my opinion, be an expensive piece of work, and would not give much satisfaction after completion.

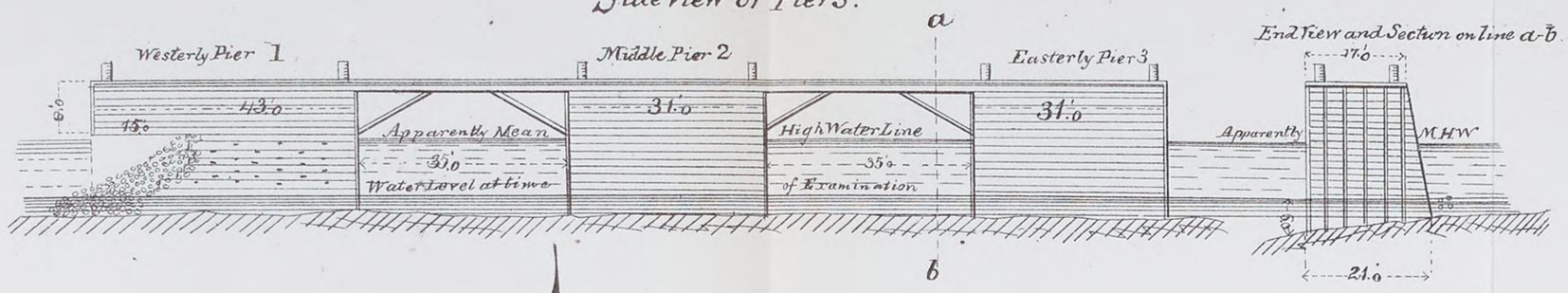
Very respectfully, your obedient servant,

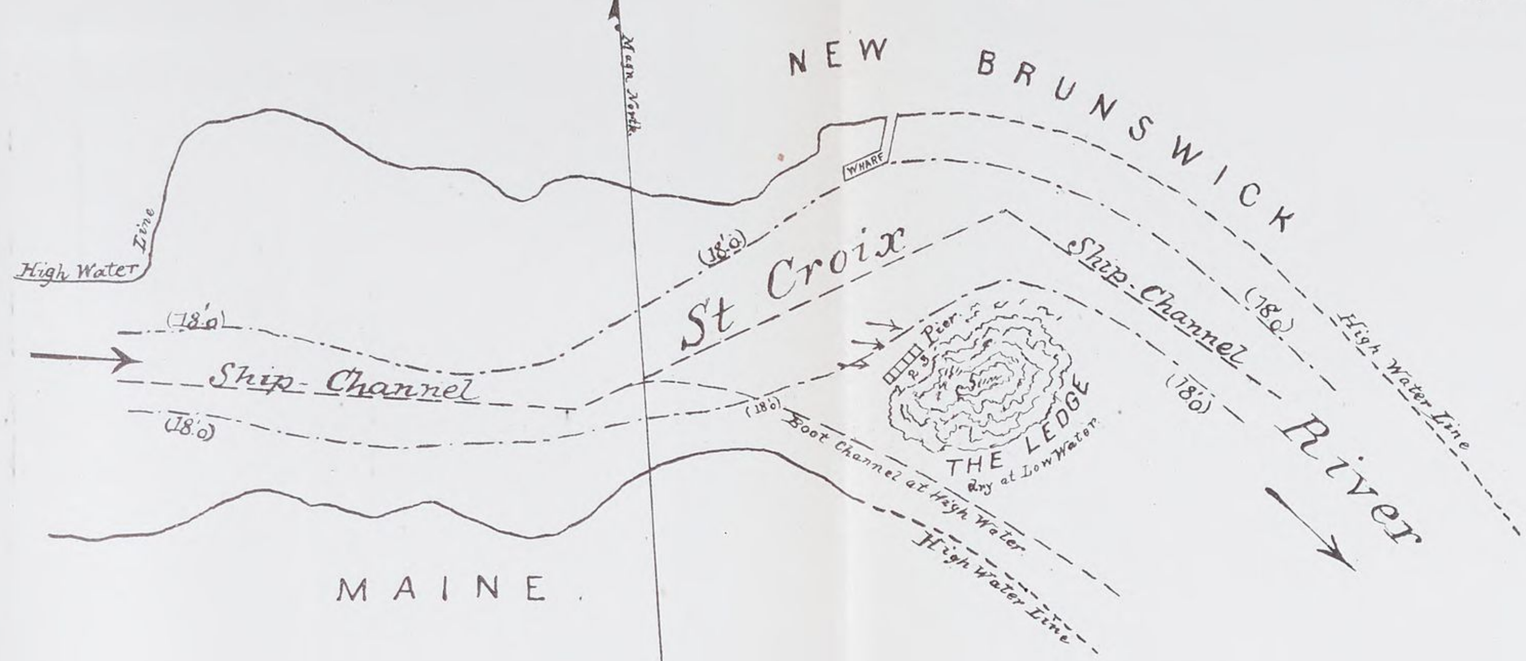
A. C. BOTH,
Assistant Engineer.

Bvt. Brig. Gen. GEORGE THOM,
Lieutenant-Colonel of Engineers, U. S. A.

Scale for Piers 1:400.

Side View of Piers.





Scale of plan 1:96.000.

Sketch showing

Location of Pier at the Ledge,

Saint Croix River Me

Also side and end-view of the Pier

Sent with letter of this date to
Bvt Brig General Geo. Thom, Col. of Engrs.

Jonesport Me. Nov. 1st 1878
A C. Both
Assist Engr

U. S. Engineer Office
Portland, Me December 23rd 1880.
To accompany special report of this date to the
Chief of Engineers, U. S. Army.

Geo. Thom
Colonel of Engineers,
Bvt. Brig. Gen'l. U.S.A.

House Ex. Doc. N° 27, 3d Sess. 46th Cong.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 28.

COANJOK BAY.

LETTER

FROM

THE SECRETARY OF WAR,

RELATIVE

To the survey of Coanjok Bay.

JANUARY 8, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 6, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, letter from the Chief of Engineers, dated the 5th instant, inviting attention to his last annual report at page 121, under head of improving "Currituck Sound and North River Bar, North Carolina," and copy of report from Capt. C. B. Phillips, Corps of Engineers, upon the survey of Coanjok Bay, this last having been added to the above improvement by the last river and harbor act.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 5, 1881.

SIR: In my annual report for the last fiscal year at page 121, under the head "Improving Currituck Sound and North River Bar, North Carolina," it was stated that "Coanjok Bay having been added to this work by the last act, a survey and estimate of cost of its improvement will be made during the fiscal year," and in fulfillment thereof I have now the honor to submit the inclosed copy of a report of Capt. C. B. Phillips, Corps of Engineers, dated December 28, 1880, upon the survey in question and accompanying sketches, showing the proposed improvement, with an estimate of its cost, which it is recommended be sent to the

Speaker of the House of Representatives for the information of the Committee on Commerce.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

UNITED STATES ENGINEER OFFICE,
Norfolk, Va., December 28, 1880.

GENERAL: In my last annual report upon the "Improvement of Currituck Sound and North River Bar, North Carolina," I had the honor to state as follows: "As Coanjok Bay has been added to this work, a survey and estimate of cost of improving same will be made in time to decide whether it will be better to apply the balance to improving the bay or the bar at the mouth of North River."

In my report the context indicated that this balance referred to the surplus of the present appropriation after completing the improvement of Currituck Sound.

During the present month, my assistant, Mr. George H. Elliott, has completed a survey of that portion of Coanjock Bay, which it is proposed to improve, and I have the honor to transmit herewith a tracing, showing the location and dimensions of the proposed channel and its protecting dike.

Coanjock Bay, like Currituck Sound, is a link in the line of water communication between Norfolk Harbor and Albemarle Sound, the line being known as the Albemarle and Chesapeake Canal route.

It is proposed to excavate a channel through the bay of the same dimensions as those now being given to the channel through Currituck Sound, viz, 80 feet in width at bottom and 9 feet in depth at an ordinary *winter* stage of water. The cut will be 14,226 feet in length, and will require the excavation of material, as follows: In bank, 31,871 cubic yards; in cut, 144,754 cubic yards; total, 176,625 cubic yards, which, at 20 cents per yard, will amount to $35,325.

This cut will need to be protected on the western side over the greater portion of its length. It is proposed to accomplish this by means of a dike, which, in this locality, can be most cheaply constructed of oyster shells.

The proposed dike will be 9,200 feet in length, will be located 25 feet away from the cut, and will be of the following dimensions: width at bottom, 10 feet; width at top, 4 feet; height, 6 feet.

A dike of the above dimensions will require 34 bushels of shells to each linear foot. Total for 9,200 linear feet, 312,800 bushels.

These shells can be put in place for 3½ cents per bushel. Total cost of dike, $10,948, or at the rate of $1.19 per linear foot.

RECAPITULATION.

Dredging 176,625 cubic yards, at 20 cents	$35,325 00
9,200 linear feet dike, at $1.19 per foot	10,948 00
Add 15 per cent. contingencies, superintendence, &c	6,940 95
Total	53,213 95
From which deduct (being the approximate amount which will be expended in the bay under existing authority from the Chief of Engineers)	3,000 00
Balance	50,213 95

The expenditure of the above amount appears to me to be proper to be made for the improvement of Coanjok Bay.

It can well be expended to good advantage during a single fiscal year, and I respectfully recommend that the amount be added to the $20,000 asked for in the last annual report for the "improvement of Currituck Sound, Coanjok Bay, and North River Bar, North Carolina."

I am, general, very respectfully, your obedient servant,

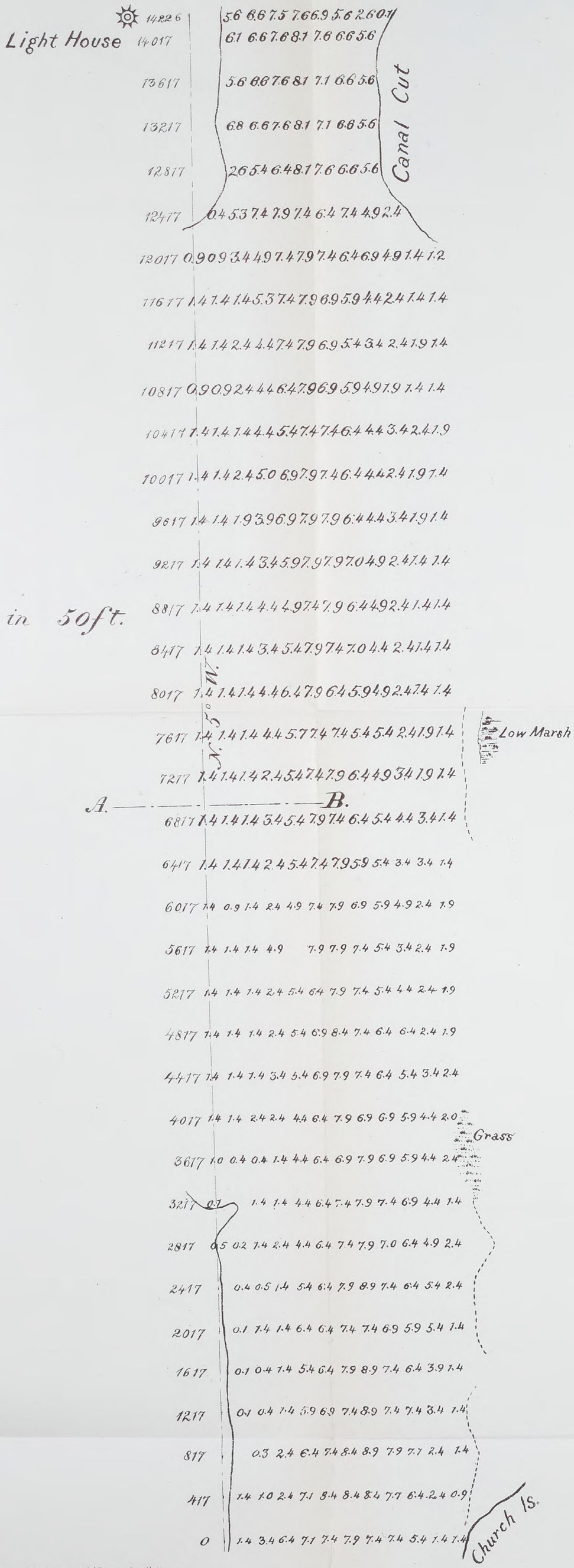
CHAS. B. PHILLIPS,
Captain of Engineers, U. S. A.

The CHIEF OF ENGINEERS, U. S. A.

O

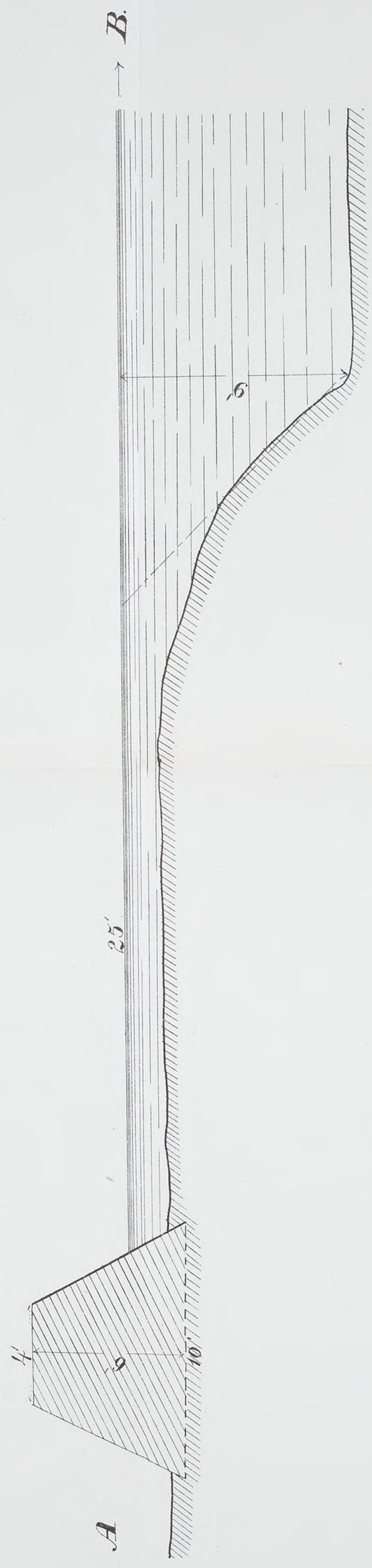
Improvement of Currituck Sound, Coanjock Bay and North River Bar, N.C.

Channel through Coanjock Bay.



Scale: 1 in = 1000 ft

Scale: 1 in = 50 ft.



Section through A-B. showing proposed bank.

Scale: 1 in = 5 ft.

U.S. Engineer Office
Norfolk, Va. Dec. 28. 1880.

House. Ex. Doc. N° 28. 3rd Sess. 46th Cong.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX DOC. No. 29.

MINTON POINT, ILL.

LETTER

FROM

THE SECRETARY OF WAR,

RELATIVE TO

The improvement of Minton Point, Illinois.

JANUARY 8, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 6, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, copy of a letter, dated the 23d ultimo, from Capt. O. H. Ernst, Corps of Engineers, to the Chief of Engineers, calling attention to the fact that the locality described as "Minton's Point," *Missouri*, in the river and harbor act of 1880, is intended to be Minton Point, Illinois.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

UNITED STATES ENGINEER OFFICE,
Saint Louis, Mo., December 23, 1880.

GENERAL: In the item of the river and harbor act of June 14, 1880, appropriating $20,000 for "improving the Mississippi River at or near Cape Girardeau and Minton's Point, Missouri," the locality described as "Minton's Point, Missouri" is intended for Minton Point, Illinois. It is respectfully suggested that if a further appropriation for this locality be made this year it would be well to correct the phraseology of the law.

Very respectfully, your obedient servant,

O. H. ERNST,
Captain of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

[First indorsement.]

OFFICE CHIEF OF ENGINEERS, U. S. A.,
January 3, 1881.

Copy respectfully submitted to the honorable the Secretary of War, with recommendation that it be sent to the Speaker of the House of Representatives for information of the Committee on Commerce.

H. G. WRIGHT,
Chief of Engineers, Brigadier and Brevet Major-General.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 30.

CLAIMS ALLOWED BY ACCOUNTING OFFICERS OF THE TREASURY.

LETTER

FROM

THE SECRETARY OF THE TREASURY,

TRANSMITTING

A list of claims allowed under act approved June 14, 1878.

JANUARY 8, 1881.—Referred to the Committee on Appropriations and ordered to be printed.

TREASURY DEPARTMENT, *January* 6, 1881.

SIR: I have the honor to transmit herewith, in compliance with section 4 of the act of June 14, 1878 (20 Stat., 130), schedules of claims allowed by the several accounting officers of the Treasury Department under appropriations, the balances of which have been exhausted or carried to the surplus fund under the provisions of section 5 of the act of June 20, 1874, amounting to $930,561.27.

Very respectfully,

JOHN SHERMAN, *Secretary.*

Hon. SAMUEL J. RANDALL,
Speaker of the House of Representatives.

Amounts allowed by the accounting officers of the Treasury Department.

ALLOWED BY THE FIRST COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	LEGISLATIVE.					
	COURT OF CLAIMS.					
222842	Mohun Brothers	Contingent expenses Court of Claims	1877		$34 80	
	DEPARTMENT OF STATE.					
	FOREIGN INTERCOURSE.					
91327	Edward Crocker, American seaman	Relief of destitute American seaman	1873	$27 00		Extra wages due him.
90091	Owners of American schooner J. W. Coffin	do	1877	360 00		For refunding extra wages erroneously collected by late consul at Rio Grande.
					387 00	
91599	W. T. Rice, consul at Spezia	Contingent expenses United States consulates.	1875	75 00		3d quarter, 1874.
91696	L. E. Dyer, consul at Odessa	do	1876	17 06		2d quarter, 1876.
					92 06	
91617	W. T. Rice, consul at Spezia	Salaries United States consuls	1875		28 53	July 1 to July 7, 1874.
	Total Department of State, Foreign Intercourse				507 59	
	TREASURY DEPARTMENT.					
	INTERNAL REVENUE.					
28122	Wilmerding & Co	Redemption of stamps	1878	162 50		
28329	Yuengling & Co	do	1878	100 00		
					262 50	
28047	J. C. Ayer & Co	Allowance or drawback	1875	205 20		
28299	Hostetter & Smith	do	1876	40 18		
27782	J. C. Ayer & Co	do	1877	220 32		
27001	George S. Scott	do	1877	57 03		
27229	Emil Mayer	do	1877	106 07		
26709	J. C. Ayer & Co	do	1877	69 99		
26705	Seabury & Johnson	do	1878	49 25		
28493	Lauman & Kemp	do	1878	29 09		
					777 13	
27880	Estate of F. M. Harrell	Refunding taxes illegally collected under the direct tax laws.	1866		15 78	
28208	John S. Van Winkle	Refunding taxes illegally collected	1867 and 1868	57 78		
28669	Lovatus Rising	do	1876	39 60		
27798	Boiryer, Sale & Co	do	1876	1,878 45		

27097	Eagle and Phenix Savings Department	...do	1877	458 81	
28217	Solomon Schwenger	...do	1877	469 80	
28503	J. H. Hutchings	...do	1878	50 26	
27784	Richard Maeger	...do	1878	18 26	
					2,972 96
28287	Central Pacific Railroad Company	Salaries and expenses of supervisors and subordinate officers of internal revenue.	1877	3 35	
16040	D. B. Cliffe	...do	1877	96 00	
28786	Union Pacific Railroad Company (Omaha Bridge and Transfer Company).	...do	1877	20	
28325	Kansas Pacific Railroad Company	...do	1877	17 01	
26934	A. Q. Keasbey	...do	1876	200 00	
26933	...do	...do	1877	485 00	
					801 56
26933	...do	Salaries and expenses of agents and subordinate officers of internal revenue.	1878	380 00	
28786	Union Pacific Railroad Company (Omaha Bridge and Transfer Company).	...do	1878	13	
28286	Kansas City and Santa Fé Railroad Company.	...do	1878	1 06	
28324	Missouri Pacific Railroad Company	...do	1878	6 28	
28436	Saint Louis, Iron Mountain and Southern Railroad Company.	...do	1878	2 96	
28325	Kansas Pacific Railroad Company	...do	1878	1 87	
					392 30
15584	O. P. Johnson	Salaries and expenses of collectors of internal revenue.	1877	18 00	
16279	Franklin J. Rollins	...do	1878	2 00	
					20 00
26058	H. F. Monroe	Expenses of assessing and collecting internal revenue.	1867	34 37	
10744	William Welling	...do	1869	17 21	
8447	William L. Clark	...do	1872	290 19	
8448	L. C. Rice	...do	1872	264 62	
8449	A. W. Hawkins	...do	1873	50 00	
26934	A. Q. Keasbey	...do	1874 and 1875	480 00	
					1,136 39
28726	W. M. Spencer	Refunding money erroneously received and covered into the Treasury.	1875	.....	64 95
	MISCELLANEOUS.				
222255	Union Pacific Railroad Company (Omaha Bridge and Transfer Company).	Contingent expenses assay office, Helena	1876	.....	02
222255	...do	Contingent expenses United States mint, Carson.	1876	04	
208114	Central Pacific Railroad Company	...do	1877	15 42	
221290	...do	...do	1878	39 84	
221291	Union Pacific Railroad Company	...do	1878	85 56	
					140 86
222255	Union Pacific Railroad Company (Omaha Bridge and Transfer Company).	Contingent expenses independent treasury	1876	08	
222255	...do	...do	1877	06	

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE FIRST COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	TREASURY DEPARTMENT—Cont'd.					
	MISCELLANEOUS—Continued.					
210889	C. H. Lord	Contingent expenses independent treasury	1877	$189 75	$189 89	
222255	Union Pacific Railroad Company (Omaha Bridge and Transfer Company).	Contingent expenses steamboat-inspection service.	1876	01		
222255	do	do	1877	01	02	
222255	do	International Exhibition of 1876	1876		1 19	
222255	do	Contingent expenses United States mint, San Francisco.	1877	08		
221289	Central Pacific Railroad Company	do	1878	14 69	14 77	
221745	Kansas Pacific Railroad Company	Contingent expenses United States mint, Denver.	1877		6 43	
220956	Adams Express Company	Freight on bullion, United States mint, Philadelphia.	1878		1,041 92	
221725	Central Pacific Railroad Company	Contingent expenses United States mints and assay offices.	1878		3,875 95	
	Total Treasury Department				11,714 62	
	DEPARTMENT OF THE INTERIOR.					
35183	Southern Pacific Railroad Company	Contingent expenses General Land Office.	1878		26 04	
	PUBLIC LANDS SERVICE.					
35168	James T. Stratton	Surveying public lands in California	1867	77 26		
35187	Alexander McKay	do	1874	612 91		
35188	T. J. Dewoody	do	1875	751 83		
35186	George B. Tolman	do	1877	524 45	1,966 45	
35169	Lewis Kingman	Surveying public lands in New Mexico	1874		305 03	
35185	John J. Byles	Surveying public lands in Louisiana	1875		699 96	
35173	Thomas Creighton	Surveying public and private lands	1877 and 1878		394 22	
35174	John R. Farrell	Salaries, office surveyor-general of Arizona	1877		203 57	
35182	Southern Pacific Railroad Company	Depredations on public timber	1878		85 76	
17756	Royal H. Waller	Salaries and commissions of registers and receivers.	1863	94 10		
18093	Francis E. Adams	do	1864	1,878 48		
20770	E. A. Allen	do	1868	646 97		

20697	C. D. Martin	....do	1869	645 78		
30842	Asa Hodges	....do	1877	631 66		
31469	Louis Dugal	....do	1878	89 65		
30841	Asa Hodges	....do	1878	446 00		
31553	M. W. Gibbs	....do	1878	120 00		
31640	W. B. Mitchell	....do	1878	104 31		
					4, 656 95	
20844	E. W. Willett	Contingent expenses of land-offices	1869	75 00		
31553	M. W. Gibbs	....do	1878	72 00		
					147 00	
29005	State of Kansas	Five, three, and two per centum fund to States.	1877		190, 268 27	Act June 29, 1861, vol. 12, p. 127.
	Total Interior Department				198, 753 25	
	DEPARTMENT OF JUSTICE.					
	JUDICIAL.					
219926	Theophilus Gaines, late United States district attorney, Montana Territory.	Salaries district attorneys	1878		24 45	Salary from Aug. 5 to Sept. 19, 1877.
222737	Charles C. Tompkins, late United States marshal, district of Colorado.	Salaries district marshals	1877	40 66		Salary from Apr. 1 to June 13, 1877.
222738	Philip P. Wilcox, United States marshal, district of Colorado.	....do	1877	9 34		Salary from June 14 to June 30, 1877.
					50 00	
13599	Wesley Jones, deceased	Expenses of United States courts, 1878 and prior years.	1862	103 69		
68278	Andrew B. Davis	....do	1867	14 00		
65807	James P. Rogers	....do	1870-'71-'72-'73-'74, and 1878.	84 50		
64364	H. C. Sluss	....do	1871-'72-'73-'74-'75-'76, & '78.	427 85		
64698	Charles E. Marsh	....do	1872	14 85		
64699	....do	....do	1873	32 35		
67147	Henry Lafors	....do	1873	18 00		
68237	William A. Britton	....do	1873	679 48		
67233	Asa Fowler	....do	1874, 1875, 1876, and 1877.	162 40		
67013	A. G. Paddock	....do	1874	642 50		
67378	J. P. Clarke	....do	1874	84 00		
65833	Albert R. Hatch	....do	1875	5 50		
64461	E. B. Harrison	....do	1875	11 80		
58182	Samuel Farman	....do	1875	20 15		
68262	Frank Straus	....do	1875	31 95		
60463	T. F. Purnell	....do	1875	230 70		
51383	John G. Stetson	....do	1876	121 39		
65891	Henry Stenoff	....do	1876	8 50		
63635	Lucien Eaton	....do	1876	54 80		
67098	William E. Dove	....do	1876	133 00		
68261	Thomas J. Bigford	....do	1876	15 00		
64462	E. B. Harrison	....do	1876	6 70		
66237	William Nelson	....do	1876	56 50		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE FIRST COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	DEPARTMENT OF JUSTICE—Cont'd.					
	JUDICIAL—Continued.					
66238	William Nelson	Expenses of United States courts, 1878 and prior years.	1876	$43 35		
63864	George R. Maxwell	do	1876	552 92		
64060	do	do	1876	1,783 50		
64454	U. M. Rose	do	1876 and 1877	600 00		
65029	John T. Watson	do	1876 and 1877	44 65		
67372	F. Bloodgood	do	1876 and 1877	1,479 85		
65412	Thomas Whitehead	do	1876 and 1877	793 72		
65967	Board of supervisors, Rockingham County, Virginia.	do	1876 and 1877	800 00		
68470	Hannibal Forbes	do	1876 and 1877	154 55		
64463	E. B. Harrison	do	1877	11 80		
66829	M. Hopkins	do	1877	9 25		
65687	John J. Lawson	do	1877	6 90		
66174	Charles G. McCord	do	1877	14 85		
67030	John M. Chilton	do	1877	13 55		
61166	John P. Southworth	do	1877	770 00		
62313	W. H. Hunter	do	1877	22 35		
63636	Lucien Eaton	do	1877	72 95		
64233	N. T. Sheafe	do	1877	18 10		
63995	James Walton	do	1877	26 00		
68321	State of Indiana	do	1877	30 00		
65875	J. W. Poe	do	1877	100 00		
67977	Parsons Cooke	do	1877	67 50		
65321	N. J. Coleman and H. M. Ramsey	do	1877	16 40		
65253	Laban Mains	do	1877	9 10		
66247	William Nelson	do	1877	16 32		
61825	H. W. Leffingwell	do	1877	25 30		
64880	John E. Sherman	do	1877	667 60		
67226	Joseph D. Bates	do	1877	5 04		
68527	do	do	1877	28 00		
67916	Benjamin J. Spooner	do	1878	8,057 60		
66261	William Nelson	do	1878	3 00		
64810	S. P. Evans	do	1878	277 81		
66982	R. H. Crittenden	do	1878	3,189 17		
66259	William Nelson	Expenses of Territorial courts in Utah, 1878 and prior years.	1877	100 00	$22,670 74	

66260	.....do	.....do	1877	704 44		
66269	.....do	.....do	1878	19 00		
66281	M. Shaughnessy	.....do	1878	214 54		
					1,037 98	
	Total Department of Justice—judicial				23,783 17	

RECAPITULATION OF CLAIMS ALLOWED BY THE FIRST COMPTROLLER.

Legislative:			
Contingent expenses Court of Claims			$34 80
State Department;			
Foreign intercourse			507 59
Treasury Department:			
Internal revenue, as follows:			
Redemption of stamps	$262 50		
Allowance or drawback	777 13		
Refunding taxes illegally collected under direct tax laws	15 78		
Refunding taxes illegally collected	2,972 96		
Salaries and expenses of supervisors, &c., of internal revenue	801 56		
Salaries and expenses of agents, &c., of internal revenue	392 30		
Salaries and expenses of collectors of internal revenue	20 00		
Expenses of assessing and collecting internal revenue	1,136 39		
Refunding money erroneously covered into the Treasury	64 95		
		$6 443 57	
Miscellaneous		5,271 05	
			11,714 62
Interior Department:			
Contingent expenses General Land-Office		26 04	
Public lands service, as follows:			
Surveying public lands in California	1,966 45		
Surveying public lands in New Mexico	305 03		
Surveying public lands in Louisiana	699 96		
Surveying public and private lands	394 22		
Salaries office of surveyor-general of Arizona	203 57		
Depredations on public timber	85 76		
Salaries and commissions of registers and receivers	4,656 95		
Contingent expenses of land-offices	147 00		
Five, three, and two per cent. fund to States	190,268 27		
		198,727 21	
			198,753 25
Department of Justice—judicial:			
Salaries district attorneys		24 45	
Salaries district marshals		50 00	
Expenses of United States courts		22,670 74	
Expenses of Territorial courts in Utah		1,037 98	
			23,783 17
Total			234,793 43

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE COMMISSIONER OF CUSTOMS, UNDER SECTION 4, ACT JUNE 14, 1878.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
80316	H. H. Wilson	Expenses of collecting the revenue from customs, 1878 and prior years.	1875 and 1876..	$50 00		
80316	B. F. Major	do	1876 and 1877..	139 50		
80316	W. Allmendinger	do	1876	40 50		
80316	W. H. Etter	do	1876 and 1877..	49 50		
80316	George G. Cressy	do	do	47 00		
80316	J. P. Rodenbusch	do	do	136 50		
80316	William Wilson	do	do	135 50		
80316	James Aiken	do	do	46 00		
80316	William Wiley	do	do	135 50		
80316	John D. Severn	do	1876	7 00		
80316	Jacob C. Queen	do	1876 and 1877..	62 50		
80316	George W. Brazer	do	do	134 50		
80316	John A. Arnold	do	do	133 00		
80316	James Christie	do	do	129 00		
80316	W. G. Wright	do	do	131 00		
80316	John E. Schafer	do	do	39 00		
80316	James H. Doak	do	do	128 00		
80316	W. McDade	do	do	127 50		
80316	Edward Smith	do	do	127 50		Difference between amount paid and legal compensation, under sections 2733 and 2738, Revised Statutes.
80316	W. D. Moore	do	1876	28 50	.....	
80316	John W. Gwin	do	1876 and 1877..	35 00		
80316	Hart Darragh	do	1877	75 50		
80316	James L. White	do	1876 and 1877..	7 00		
80316	B. W. Roberts	do	1877	220 24		
80316	Richard Davis	do	1876	6 00		
80316	L. C. Fox	do	1876 and 1877..	141 00		
80316	W. H. Jones	do	1877	116 00		
80316	James Keith	do	1877	34 00		
80316	W. H. Richardson	do	1876 and 1877..	285 50		
80236	W. W. Bullock	do	1877	20 51		
80236	Albert Batchelder	do	1876	7 60		
80236	Joseph Josselyn	do	1877	65 10		
80236	P. H. Perkins	do	1877	14 66		
80236	Chris. Plunkett	do	1877	14 88		
80236	Ira Stewart	do	1876 and 1877..	29 50		
80236	Theron Temple	do	1877	4 30		
80236	Edward A. Brown	do	1876	25 86		
80236	Joseph C. Whalton	do	1877	291 83		
80236	George Hardiman	do	1877	151 00		

80236	R. H. Smith	do	1877	118 00	.....	Difference between amount paid and legal compensation, under sections 2733 and 2738, Revised Statutes.
80236	Dennis Bankerd	do	1876 and 1877	278 00		
80236	E. Harper	do	do	231 00		
80236	William C. Davis	do	1877	14 88		
80236	James McBride	do	1876	95 00		
80303	James G. Armstrong	do	1876 and 1877	91 20	.....	Services as night inspectors at New York. Ten per cent. deducted from salary.
80303	Thomas Bates	do	do	78 30		
80303	George A. Blake	do	do	36 60		
80303	James Blacklaw	do	do	35 70		
80303	Patrick Burns	do	do	32 70		
80303	Peter Carley	do	do	87 00		
80303	William Cox	do	do	89 70		
80303	James Conchie	do	do	91 20		
80303	James Campbell	do	do	64 50		
80303	William H. Clark	do	do	85 80		
80303	Thomas J. Coleman	do	do	87 90		
80303	Joseph Dumble	do	do	87 90		
80303	Hiram De Revere	do	do	34 50		
80303	Francis J. Donnellan	do	do	85 80		
80303	John G. Deubert	do	do	85 80		
80303	Frank Fisher	do	do	83 10		
80303	Michael Gleason	do	do	90 30		
80303	John Glynn	do	do	83 40		
80303	Gilbert Griffin	do	do	83 40		
80303	David Gibbens	do	do	36 60		
80303	Charles Grovesteen	do	do	83 10		
80303	George Gerber	do	do	34 20		
80303	Archibald F. Hazard	do	do	87 30		
80303	Charles Hack	do	do	33 90		
80303	Daniel Hessee	do	do	30 90		
80303	Henry Hoefer	do	do	74 10		
80303	Louis Hoffman	do	do	91 20		
80303	Charles M. Julian	do	do	88 20		
80303	Thomas [redacted]. Kip	do	do	83 10		
80303	Henry Ling	do	do	74 40		
80303	William H. Luke	do	do	34 20		
80303	John A. Lawrence	do	do	87 30		
80303	Thomas C. Lupton	do	do	84 30		
80303	John V. Lott	do	do	86 10		
80303	Thomas McCabe	do	do	91 50		
80303	Andrew McCort	do	do	91 50		
80303	Thomas McBride	do	do	89 10		
80303	Thomas McKeon	do	do	52 80		
80303	Hugh McGinty	do	do	87 00		
80303	Emil Ney	do	do	88 50		
80303	Harry Nugent	do	do	80 70		
80303	George D. Overin	do	do	35 40		
80303	John O'Neil	do	do	83 10		
80303	Joseph C. Scully	do	do	38 10		
80303	George W. Quin	do	do	26 10		
80303	Abel L. Reed	do	do	84 30		
80303	David Richardson	do	do	85 80		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE COMMISSIONER OF CUSTOMS, UNDER SECTION 4, ACT JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
80303	Philip Reilly	Expenses of collecting the revenue from customs, 1878 and prior years.	1876 and 1877..	$53 10		
80303	William R. Spooner	do	do	61 50		
80303	Joseph Smith	do	do	85 80		
80499	Calvin Y. Shepard	do	do	36 60		
80499	Robert Schwartzkopf	do	do	84 00		
80499	Thomas Scanlin	do	do	30 60		
80499	Jacob Swartz, jr	do	do	90 90		
80499	William C. Smith	do	do	91 50		
80499	Stephen Shangle	do	do	84 00		
80499	Thomas K. Sharp	do	do	81 90		
80499	Michael Smith	do	do	91 50		
80499	Elisha Travis	do	do	91 50		
80499	William G. Tway	do	do	33 30		
80499	Joseph Trimble	do	do	87 00		
80499	Hugh Turner	do	do	86 10		
80499	David Van Osdoll	do	do	87 30		
80499	D. K. Van Derlip	do	do	33 30		
80499	James Webb	do	do	91 20		
80499	James Whytal	do	do	83 70	.....	Services as night inspectors at New York. Ten per cent. deducted from salary.
80499	Edward Welsh	do	do	87 60		
80499	George Williams	do	do	88 20		
80499	Joseph Walters	do	do	89 70		
80499	William H. Winans	do	do	84 30		
80499	Joseph M. Wild	do	do	91 50		
80499	R. George Waters	do	do	84 60		
80499	John H. Strand	do	do	33 90		
80499	William De Angelis	do	do	87 30		
80499	Ambrose Minnerlee	do	do	35 40		
80499	Peter Kearns	do	do	88 50		
80499	John Garrett	do	do	36 60		
80499	Gabriel Van Cott	do	do	36 30		
80499	Timothy J. Donohue	do	do	87 30		
80499	David H. Tobin	do	do	9 60		
80499	Plumb B. Nichols	do	do	90 90		
80499	Howard A. Whitfield	do	do	31 50		
80499	Benjamin S. Steen	do	do	36 60		
80499	Andrew J. Van Horn	do	do	33 60		
80499	Thomas J. Casey	do	do	87 90		
80499	Samuel Davis	do	do	31 50		

80499	Timothy Lynch	do	do	87 90	.....	Services as night inspectors at New York. Ten per cent. deducted from salary.
80499	George W. Logan	do	do	36 30		
80499	Joseph Murphy	do	do	28 20		
80499	John Noa	do	do	33 00		
80747	William W. Lambert	do	1877	67 00		
80747	James P. Wright	do	1876 and 1877	125 50		
80747	R. W. Pryor	do	1876	60 50		
80747	Z. P. Spates	do	1877	33 50		
80747	Benjamin N. Gray	do	1876 and 1877	222 50		
80747	W. F. Taylor	do	1877	45 50		
80747	John F. Daly	do	1877	66 10		
80747	John L. Rice	do	1876	15 40		
80747	Samuel Taylor	do	1876	49 50		
80925	Samuel Randall	do	1876 and 1877	126 00		
80925	James B. Wiley	do	do	94 50		
80925	Frank Lynch	do	1876	35 70		
80925	Theodore Lipshuts	do	1876	91 00		
80925	John E. Charles	do	1876 and 1877	265 50		
80871	N. L. Miller	do	1874–'75–'76	607 50		
80871	John G. Sheffield	do	do	993 57		
81703	J. R. Matthews	do	1877	147 50		
81703	E. S. Hamilton	do	1876–'77–'78	8 61		
81703	James A. Chamberlain	do	1875 and 1876	169 00		
81703	John E. P. Wright	do	1874–'75–'76–'77	426 00		
81703	John Harris, jr	do	1876	12 00		
81703	T. H. Rowan	do	1878	30 00		
81703	Charles H. Ross	do	1876	3 54		Difference between amount paid and legal compensation under sections 2733 and 2738, Revised Statutes.
81703	C. C. Sewall	do	1877	13 10	.....	
81703	James Ward	do	1878	87 00		
81703	Joshua S. Barton	do	1876	33 00		
81732	Israel J. Beniteau	do	1874 and 1875	134 50		
81732	William H. Stoddard	do	1874–'75–'76	833 55		
81732	Jacob L. Wallace	do	do	833 55		
81732	William H. Beisel	do	do	833 55		
81732	John D. Flint	do	do	833 55		
81732	A. McIlhinny	do	1874 and 1875	606 00		
81732	Lester H. Cotton	do	do	141 50		
81732	Jacob W. Moore	do	do	141 50		
81732	Samuel H. Farnsworth	do	do	83 00		
81732	William Farnsworth	do	do	919 00		
81732	James C. Latham	do	1875 and 1876	66 49		
81732	James L. Kellogg	do	do	66 49		
81732	Milo W. Barrows	do	do	51 49		
81732	Jonathan Hudson	do	1875	82 00		
81910	Francis E. Witsell	do	1876 and 1877	1,222 30		
81910	Hubbard M. Clemons	do	1875 and 1876	760 04		
81910	George S. Haskin	do	1874–'75–'76	904 13		
81910	D. K. Huntington	do	do	563 36		
81910	Henry W. Gladding	do	do	934 82		
81910	Henry C. Carleton	do	1874–'75–'76–'77	570 50		
81910	Josiah R. Brooks	do	1874–'75–'76	790 54		
81910	John Q. Barnard	do	do	300 96		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE COMMISSIONER OF CUSTOMS, UNDER SECTION 4, ACT JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
81910	Albert C. Hayward	Expenses of collecting the revenue from customs, 1878 and prior years.	1874–'75–'76–'77	$062 00		
81910	Peter C. Bird	do	do	650 00		
81910	Albert Ellsworth	do	1875–'76–'77	1, 261 95		
81910	Stephen Goss	do	1874 and 1875	247 72		
82012	J. B. McNeal	do	1876	122 50		
81806	Julius R. Morris	do	1874–'75–'76	563 36		
81806	James L. Mallory	do	do	1, 017 82		
81806	Harry Griswold	do	do	847 40		
81806	William Lowen	do	do	749 21		
81806	William C. Holder	do	do	690 46		
81806	William H. Waitt	do	do	105 27		
81806	T. Jeff. Hill	do	1874 and 1875	224 00		
81806	John U. Hill	do	1874–'75'–76	549 66		
81806	Isaac Winslow	do	1874–'75–'76–'77	870 69		
81806	Calvin W. Appleby	do	1874–'75–'76	905 50		
81806	Harrison Hume	do	1875 and 1876	62 00		
81806	James Thurston	do	1874 and 1875	724 72		
81806	John F. Rutherford	do	do	159 22		Difference between amount paid and legal compensation under sections 2733 and 2738, Revised Statutes.
81806	Samuel Butler	do	1874–'75–'76	700 23	.....	
81667	Sarah A. Ewart	do	do	522 00		
81667	Charles Carroll	do	1875	45 00		
81667	Francis Kiah	do	1874 and 1875	111 00		
81667	Marcus Peters	do	1874–'75–'76	405 00		
81667	W. L. Best	do	do	202 50		
81818	Michael Baker, 3d	do	1875–'76–'77	1, 795 70		
81818	Harry A. Ashmore	do	1874–'75–'76	895 80		
81818	John P. States	do	do	771 41		
81818	Gustave Jaenicke	do	do	227 50		
81818	Thomas McKnight	do	1874 and 1875	215 00		
81818	E. Adams Davis	do	do	112 00		
81818	Seth G. Low	do	do	285 00		
81818	Reuben Brooks	do	1875 and 1876	118 00		
81818	Stephen B. Berry	do	do	346 00		
81818	J. D. Goodwin	do	do	90 50		
81818	Samuel Comer	do	1874–'75–'70	206 70		
81818	Charles Roberts	do	1875 and 1876	129 50		
81818	Isaac McMaster	do	1874 and 1875	178 63		
81818	John A. Ladue	do	1874–'75–'76	216 95		

81818	Charles L. Hagar	do	1875 and 1876..	119 50		
81818	Nathan Hall	do	1874–'75–'76 ...	216 95		
81977	Enoch F. Baxter	do	1874 and 1875..	488 78		
81977	Joseph Z. Pratt	do	....do	224 00		
81977	Levi B. Downs	do	1874–'75–'76 ...	405 00		
81977	M. B. Grissett	do	1874 and 1875..	447 82		
81977	John A. French	do	1874–'75–'76 ...	151 67		
81977	John W. Davis	do	1874 and 1875..	561 77		
81977	Isaac B. Young	do	1874–'75–'76 ...	567 56		
81977	S. L. Hamlin	do	1875 and 1876..	101 08		
81977	Simeon Atwood	do	1874–'75–'76 ...	329 32		
81977	Alvan S. Hallett	do	....do	329 32		
81977	James Gifford	do	....do	186 42		
81977	Samuel S. Baker	do	....do	281 70		
81977	F. M. Noble	do	....do	172 75		
81977	Jesse Babcock	do	....do	217 75		
81977	R. M. Esselstyn	do	....do	217 75		
81977	James L. Cline	do	....do	217 75		
81977	William Dewey	do	1874 and 1875..	199 75		
82089	Jeremiah Abbott	do	1874–'75–'76 ...	411 12		
82089	Wesley P. Henderson	do	1875 and 1876..	190 00		
82089	Henry R. Loomis	do	1874 and 1875..	304 49		
82089	Barney H. Dyckman	do	....do	653 33		
82089	Henry M. Newcombe	do	1874–'75–'76 ...	904 44		
82089	Louis M. Hartwick	do	... do	972 45		
82089	Henry D. Post	do	1874 and 1875..	700 33	.....	Difference between amount paid and legal compensation under sections 2733 and 2738, Revised Statutes.
82089	Thomas J. Ramsdell	do	1874–'75–'76 ..	700 10		
82089	George Robinson	do	1874 and 1875..	243 00		
82089	Abram G. Butler	do	1874–'75–'76 ...	1,040 66		
82235	B. C. Moore	do	... do	216 95		
82235	John R. Weed	do	1875 and 1876..	118 50		
82235	Lewis M. Partridge	do	1874 and 1875..	563 81		
82235	Levi Trundy	do	1874–'75–'76 ...	652 23		
82235	Charles Luling	do	....do	904 13		
82235	William T. Webb	do	1876–'77–'78 ...	434 80		
82235	John Jones	do	1877	18 00		
82235	Charles M. Roof	do	1876–'77–'78 ...	640 00		
82235	George F. Raymond	do	1875 and 1876..	163 50		
82280	William J. Alden, jr	do	1874–'75–'76 ...	761 85		
82280	Joseph S. Drew	do	....do	871 38		
82280	Stephen Holmes	do	....do	980 92		
82280	Otis Little	do	....do	202 50		
82280	Ellery D. Perkins	do	1874 and 1875..	224 00		
82280	Seth E. Bryant	do	1874–'75–'76 ...	542 77		
82280	George D. Wyman	do	....do	106 07		
82280	Andrew J. Dudley	do	....do	202 50		
82280	George C. Merrill	do	....do	202 50		
82280	Lyman H. Smith	do	....do	202 50		
82280	Halsey H. Adams	do	....do	660 54		
82280	William H. Rand	do	... do	327 82		
82280	Alonzo A. Reed	do	1874–'75–'76 ...	53 47		
82280	Richard P. Estey	do	1875–'76–'77 ...	868 00		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE COMMISSIONER OF CUSTOMS, UNDER SECTION 4, ACT JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
82280	William Williams	Expenses of collecting the revenue from customs, 1878 and prior years.	1876-'77-'78	$302 50		
82382	Peter Lander, jr.	do	do	440 11		
82382	Willard D. McKinstry	do	1875 and 1876	102 00		
82382	Hiram D. Coombs	do	1874-'75-'76	549 66		
82382	George H. Gregory	do	1875 and 1876	454 00		
82382	David D. O'Dell	do	1874-'75-'76	336 08		
82382	Charles S. Nims	do	do	1,040 66	.....	Difference between amount paid and legal compensation under sections 2733 and 2738, Revised Statutes.
82382	T. G. Edmondson	do	1875 and 1876	76 00		
82382	George H. Aydelotte	do	1874-'75-'76	327 82		
82382	Milo L. Rice	do	1875 and 1876	823 43		
82402	Hiram K. Cole	do	do	198 00		
82402	Gains P. Kingsbury	do	1874-'75-'76	563 87		
82404	Frank Brady	do	1876 and 1877	556 00		
11540	George Hopey	do	1877	144 62		
82369	Daniel H. McGillagh	do	1876-'77-'78	790 00		
81665	Hance Lawson, collector, Crisfield, Md.	do	1871-'72-'73-'74	576 60	.....	Commissions on marine hospital collections.
76524	Thomas Kearney, collector, Corpus Christi, Tex.	do	1878	479 94	.....	Balance due on settlement of account.
11193	George Toy, collector, Cherrystone, Va.	do	1874	98 90	.....	To refund money erroneously deposited.
81204	Thomas S. Hodson, collector, Crisfield, Md.	do	1877	32 58	.....	Balance due on settlement of account.
81894	Joseph M. Tomlinson, deputy collector	do	1876 and 1877	1,079 67	.....	Arrears of compensation, section 2697, Revised Statutes.
81666	Robert Bell	do	1874	146 80	.....	Salary as district officer, San Francisco.
65522	M. Hopkins	do	1874-'75-'76	63 10	.....	Fees not heretofore charged.
67271	Joseph D. Bates, United States marshal, Connecticut.	do	1878	21 67	.....	Fees in customs cases.
61982	Jack Wharton, United States marshal, Louisiana.	do	1878	22 30	.....	Do.
10250	Joseph A. Dreyfous	do	1877	88 80	.....	Traveling expenses.
11183	Union Pacific Railroad	do	1878	22 83	.....	Freight.
11416	Union Pacific Railroad Company, Omaha Bridge Transfer Company.	do	1877 and 1878	53	.....	Do.
					$74,563 97	
10252	Jay D. Edwards	Life-saving service, contingent expenses	1875	37 00	.....	Freight and fuel.
10390	John S. Barney	do	1878	15 00	.....	Services of tug S. S. Barons.
					52 00	
10682	Joel D. Ashberry	Expenses of light-vessels	1861	160 71	.....	Services as keeper York Spit light-vessel.

11258	M. L. Stansbury	do	1863	88 80		Services as keeper light-vessel.
					249 51	
68290	G. W. Stockwell	Salaries of keepers of light-houses	1861		206 59	Services as light-house keeper.
67745	Union Pacific Railroad Company	Supplies of light-houses	1874–'75–'76–'77–'78.	573 65		Freight.
67758	do	do	1874–'75–'76	637 55		Do.
67747	Central Pacific Railroad Company	do	1875–'76–'77–'78	1,206 33		Do.
67735	Omaha Bridge Transfer Company	do	1875 and 1876	1 36		Do.
63924	Commander George B. White, U. S. N.	do	1877	59 45		Mileage.
11416	Union Pacific Railroad Company, Omaha Bridge Transfer Company.	do	1877 and 1878	1 16		Freight.
					2,479 50	
11024	New York Herald	Expenses of buoyage	1877	172 80		Advertising.
10665	Oliver Olsen	do	1861	26 67		Services on buoy-tender Howell Cobb.
11423	Davis & Pitman	do	1878	3 00		Advertising.
					202 47	
11136	Daily News, Newport, R. I.	Expenses of revenue-cutter service	1878	2 98		Do.
11416	Union Pacific Railroad Company, Omaha Bridge Transfer Company.	do	1877	01		Freight.
					2 99	
11416	do	Marine-hospital service	1878		01	Do.
11110	George Schuster	Refunding moneys erroneously received and covered into the Treasury (section 3689, Revised Statutes).	1877	112 50		Informer's share of fines.
11303	Samuel Hopper	do	1878	50 00		Do.
11399	do	do	1878	12 50		Do.
					175 00	
64729	Frank Hilton	Reimbursing keepers at Timbalier light-house for loss of private property (act July 20, 1868, 15 Stat., p. 113).	1867		100 00	In surplus fund.
	To adjust the accounts of certain disbursing officers of the government on account of the appropriations named below, involving the expenditure of no money from the Treasury, $6,464.63, as follows: [NOTE.—The appropriation of these amounts will take no money from the Treasury, but will be transferred to the credit of the officers named in accounts in which they are debtors to the United States in similar amounts.]					
	Engineer R. S. Williamson, U. S. A., on account of.	Anita Rock Beacon, California	1879	183 68		
74425	Charles S. English, collector, on account of.	Expenses of collecting the revenue from customs.	1878	22 01		
5270	William D. Nolen, collector, on account of.	Repairs and preservation of public buildings.	1870	20 76		
	E. A. Merritt, collector, on account of	Repayment to importers excess of deposits for unascertained duties, act of June 16, 1880.	1881	530 51		
10306	W. R. Louttit, superintendent, on account of.	Life-saving service	1877	4 40		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE COMMISSIONER OF CUSTOMS, UNDER SECTION 4, ACT JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
10650	J. M. Richardson, superintendent, on account of.	Life-saving service	1876	$5 18		
	....do	....do	1877	36 00		
9532	E. W. Watson, superintendent, on account of.	Life-saving service, contingent expenses	1877	1 75		
	Bushrod Birch, disbursing clerk, on account of.	....do	1878	106 16		
	Maj. G. Weitzel, U. S. A., on account of	Repairs, &c., of light-houses	1871	5 00		
	....do	....do	1872	5 00		
	....do	....do	1873	5 00		
	....do	....do	1874	5 00		
	....do	....do	1875	5 00		
51947	Charles F. Swift, collector, on account of	Salaries of keepers of light-houses	1876	50		
65920	Commander W. P. McCann, U. S. N., on account of.	Expenses of fog-signals	1877	222 00		
	Maj. G. Weitzel, U. S. A., on account of	....do	1878	4, 200 00		
57258	Commander A. T. Snell, U. S. N., on account of.	Supplies of light-houses	1875	1 00		
65921	Commander W. P. McCann, U. S. N., on account of.	....do	1877	321 83		
	Commander W. R. Bridgman, U. S. N., on account of.	....do	1879	58 50		
61771	Commander S. D. Ames, U. S. N., on account of.	Expenses of light-vessels	1878	413 61		
64791	Commander C. S. Norton, U. S. N., on account of.	....do	1879	311 74		
					$6, 464 63	
	Total				84, 496 67	

RECAPITULATION OF CLAIMS ALLOWED BY THE COMMISSIONER OF CUSTOMS.

Expenses of collecting revenue from customs	$74,585 98
Life-saving service	45 58
Life-saving service, contingent expenses	159 91
Salaries of keepers of light-houses	207 09
Supplies of light-houses	2,860 83
Expenses of light-vessels	974 86
Expenses of fog-signals	4,422 00
Expenses of buoyage	202 47
Repairs, &c., of light-houses	25 00
Anita Rock beacon, California	183 68
Reimbursing keepers at Timbalier light-station for loss of property	100 00
Expenses of revenue-cutter service	2 99
Marine-hospital service	01
Repairs and preservation of public buildings	20 76
Repayment to importers excess of deposits for unascertained duties	530 51
Refunding moneys erroneously received and covered	175 00
Total	84,496 67

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT.					
	CLAIMS.					
641	William Milard	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$100 00		
43541	John Cronnoble	------do	----do	100 00		
97588	John S. Stevens	------do	----do	75 00		
260083	Charles A. Smith	------do	----do	75 00		
465991	John Murtaugh	------do	----do	100 00		
546831	William Proctor	------do	----do	180 00		
587416	Washington Caldwell, alias Gentry	------do	----do	100 00		
632011	John Dighton	------do	----do	100 00		
632057	Jacob S. Barr	------do	----do	100 00		
632170	John Kinsler	------do	----do	10 71		
632649	John Griffin	------do	----do	75 00		
633113	Calvin W. Stiner	------do	----do	100 00		
633285	G. W. Smith	------do	----do	75 00		
635154	Robert Acklin	------do	----do	72 07		
635599	Pleasant James	------do	----do	90 00		
636007	Harry Cook	------do	----do	89 00		
636105	Lloyd Smith	------do	----do	189 50		
636279	David B. Hotchkiss	------do	----do	100 00		
636431	Andrew J. Rice	------do	----do	100 00		
636891	Jackson Peterson	------do	----do	240 00		
637325	Jacob Wirtz	------do	----do	100 00		
638130	Charles Hammond, alias Hiram Kirkpatrick.	------do	----do	100 00		
638137	W. H. Rodecker	------do	----do	100 00		
638208	Gabriel Swihart	------do	----do	284 61		
638216	Charles C. Walls	------do	----do	100 00		
638472	George W. Knapp	------do	----do	100 00		
638774	Samuel Senecel	------do	----do	240 00		
638882	William Long	------do	----do	100 00		
638931	George B. Abbott	------do	----do	200 00		
638934	James M. Bailey	------do	----do	200 00		
638935	John Gardner	------do	----do	180 00		
639134	Stephen Kemp	------do	----do	100 00		
639281	Chauncey Warden	------do	----do	50 00		
639287	John M. Edwards	------do	----do	100 00		
639307	Charles H. Gould	------do	----do	100 00		

639330	John Kreds	do	do	100 00
639341	John Folk	do	do	100 00
639401	David E. Welch	do	do	100 00
639402	John Martin	do	do	26 30
639414	Clarence E. Haney	do	do	100 00
639489	Amos R. Spicer	do	do	75 00
639491	David E. Martin	do	do	5 00
639500	John W. Dorrington	do	do	300 00
639502	Andrew J. Williamson	do	do	200 00
639506	William Sheppard	do	do	100 00
639510	Chester P. Page	do	do	100 00
639574	James O. Grant	do	do	100 00
639576	William Kaats	do	do	100 00
639579	Samuel Lane	do	do	33 33
639582	Hiram W. McClure	do	do	100 00
639583	Joseph H. Syphard	do	do	100 00
639584	Norman M. Owen	do	do	100 00
639585	Robert C. Brown	do	do	100 00
639587	William Waterhouse	do	do	100 00
639588	Philander Allen	do	do	83 44
639591	Ephraim Fish	do	do	100 00
639592	Peter H. Funkley	do	do	100 00
639594	Riley S. Dexter	do	do	49 57
639595	W. F. Tinstman	do	do	114 30
639596	Frederick, or Gottfried Rufer	do	do	50 00
639599	Charles E. Knoble	do	do	75 00
639604	Alva C. Kepler	do	do	100 00
639605	Charles Kolb	do	do	100 00
639607	Henry F. Jacoby	do	do	100 00
639608	James Lacy	do	do	100 00
639610	Anson Latten	do	do	50 00
639620	Thomas Myers	do	do	100 00
639623	John Morison	do	do	75 00
639625	Charles Morrow	do	do	100 00
639626	William Miller	do	do	50 00
639627	James McCune	do	do	100 00
639628	John McAnally	do	do	25 00
639630	John McDanald	do	do	100 00
639634	William C. Patterson	do	do	100 00
639636	Joseph Pelo	do	do	59 21
639639	Alexander G. Robb	do	do	200 00
639640	Benjamin A. Royce	do	do	100 00
639645	James M. Sproull	do	do	100 00
639649	John Atchison	do	do	100 00
639677	Warner Jackson	do	do	100 00
639687	Llewellyn Lindsay	do	do	86 25
639723	David McDonald	do	do	100 00
639729	William R. Glenn	do	do	75 00
639731	Lucius P. Baker	do	do	100 00
639733	James Carmical	do	do	70 63
639736	William B. Hollas, or Hollis	do	do	120 00
639739	George W. Hall	do	do	200 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
639742	Thomas Anderson	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$160 00		
639750	Garland King	do	do	100 00		
639761	Solomon Moore	do	do	60 00		
639762	Harry Cook	do	do	11 00		
639763	George W. Pogue	do	do	189 00		
639779	Edward Lavergene	do	do	100 00		
639785	John M. Cook	do	do	100 00		
639786	Ephraim Cochran	do	do	100 00		
639787	Jonathan Abbott	do	do	70 44		
639790	David Denman	do	do	100 00		
639793	Chism J. Estes	do	do	100 00		
639794	Lawrence Lavey	do	do	80 00		
639800	George Hoffner	do	do	66 67		
639801	Waddy Johnson	do	do	66 66		
639804	William Ingels	do	do	95 05		
639805	Milton A. Kinkead	do	do	100 00		
639806	Alpheus W. Rogers	do	do	100 00		
639807	William Payton	do	do	140 00		
639808	Thomas J. Letts	do	do	100 00		
639809	James E. Nash	do	do	100 00		
639811	James Waymire	do	do	75 00		
639812	George W. Cates	do	do	75 00		
639815	John L. Brooks	do	do	104 19		
639824	William H. Scott	do	do	140 00		
639827	Frank Wipperman	do	do	100 00		
639831	John H. Johnson	do	do	100 00		
639835	Robert Barbour	do	do	100 00		
639837	Thomas Jenkins	do	do	100 00		
639840	James L. Eareckson	do	do	200 00		
639841	Albert L. Drake	do	do	75 00		
639842	Walter Curtis	do	do	33 33		
639843	Theodore Stephenson	do	do	100 00		
639844	Isaac Cordon	do	do	190 00		
639846	William Tarner	do	do	323 34		
639847	Joseph Laing	do	do	100 00		
639850	Patrick Donbron	do	do	100 00		

639853	Robert D. Smith	do	do	100 00
639856	John Cook	do	do	75 00
639857	Abraham Livingood	do	do	100 00
639858	John Thomas	do	do	100 00
639860	James H. Lynch	do	do	100 00
639864	Andrew G. Rea	do	do	100 00
639867	Moses T. Anderson	do	do	100 00
639869	Robert Logan	do	do	185 00
639871	James M. Krippmer	do	do	110 00
639873	Jacob C. Limbury	do	do	100 00
639874	James B. Lucas	do	do	33 33
639875	David Ocker	do	do	21 96
639877	Edgar H. Price	do	do	100 00
639882	James H. Shisler	do	do	75 00
639886	George W. Brown	do	do	100 00
639887	Wallace W. Dickinson	do	do	90 56
639889	John C. Smith	do	do	100 00
639891	Franklin B. Swan	do	do	75 00
639897	Frank Brown	do	do	100 00
639906	George W. Adams	do	do	80 00
639907	do	do	do	8 50
639908	Sampson R. Kinton	do	do	190 00
639909	do	do	do	10 00
639910	Henry Stanley	do	do	90 00
639911	do	do	do	10 00
639912	John Watkins	do	do	100 00
639917	George Bell	do	do	190 00
639918	do	do	do	10 00
639920	George Nance	do	do	89 50
639921	do	do	do	10 50
639922	Sam. Mumford	do	do	100 00
639925	Daniel Richey	do	do	103 50
639926	do	do	do	11 50
639927	Sandy Slate, or Slade	do	do	90 00
639930	Lawson Poteete	do	do	100 00
639932	Benjamin F. Thomas	do	do	75 00
639935	Robert Henderson	do	do	100 00
639936	Joseph W. Fairless	do	do	100 00
639937	Charles W. Dipple	do	do	33 34
639939	William Ogden	do	do	75 00
639941	John Mahar	do	do	200 00
639946	Andrew J. Ham	do	do	100 00
639947	Walter S. Mountain	do	do	10 00
639948	Michael Whooly	do	do	100 00
639949	James Foster	do	do	100 00
639952	Joseph Temple	do	do	100 00
639953	James H. Cowden	do	do	295 61
639954	Cyrus Marsh	do	do	47 84
639955	Edwin R. Welch	do	do	100 00
639956	Andrew K. Bone	do	do	100 00
639959	Stephen Wilson	do	do	200 00
639971	John Coleman	do	do	100 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
639974	William Mattingly	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$75 00		
639987	Francis M. Morris	do	do	33 34		
639992	James Armstrong	do	do	100 00		
639996	Lee Metcalf	do	do	100 00		
639998	John F. Marx	do	do	100 00		
640000	William H. Rafferty	do	do	75 00		
640002	Henry H. Smith	do	do	100 00		
640003	William H. Phipps	do	do	100 00		
640014	Joseph Storey	do	do	100 00		
640017	John J. McDonald	do	do	75 00		
640018	James L. Schwerdfedger	do	do	240 00		
640019	William A. Southworth	do	do	100 00		
640023	Michael Geiger	do	do	100 00		
640024	William Ralston	do	do	100 00		
640025	James M. McCroy	do	do	75 83		
640030	William B. Meginity	do	do	100 00		
640033	Joseph Coleman	do	do	100 00		
640036	Frank Dixon	do	do	100 00		
640038	Cash Crittenden	do	do	88 50		
640039	do	do	do	11 50		
640040	Jack Carson	do	do	120 00		
640044	Horace Leftridge	do	do	10 00		
640045	Isaac West	do	do	100 00		
640046	Henry Bowman	do	do	300 00		
640048	John Rollins	do	do	100 00		
640049	Stephney Winn	do	do	79 93		
640050	do	do	do	9 00		
640051	Curry Larue	do	do	100 00		
640053	Joshua Gilford	do	do	79 23		
640056	James Lee	do	do	100 00		
640057	William Johnson	do	do	90 00		
640058	do	do	do	10 00		
640059	Henry Gregg	do	do	100 00		
640063	Nathan H. Newbury	do	do	100 00		

640064	Thomas J. Backus	do	do	100 00
640065	William Ramey	do	do	100 00
640066	Thomas Devin	do	do	60 00
640067	Alonzo S. Holden	do	do	60 68
640069	Henry Meyer	do	do	100 00
640071	Robert J. Walker	do	do	95 27
640072	Patrick Riordan	do	do	100 00
640073	Henry Willis	do	do	100 00
640074	William Keck	do	do	320 00
640075	Joseph S. Wilson	do	do	100 00
640076	William R. Spear	do	do	100 00
640078	William H. Bundy	do	do	100 00
640079	Cassen Bottcher	do	do	100 00
640085	Moses H. Smith	do	do	340 00
640086	George W. Taylor	do	do	100 00
640091	Clarence Burnside	do	do	210 00
640092	Harrison Henderson	do	do	89 00
640093	do	do	do	11 00
640094	Toby Adams	do	do	100 00
640097	Cornelius Jenkins	do	do	90 00
640098	do	do	do	10 00
640099	William H. Nelson	do	do	100 00
640102	Boston Clark	do	do	100 00
640105	Joseph Pitts	do	do	89 50
640106	do	do	do	10 50
640107	Shelby Phelps	do	do	100 00
640109	Noah Gullage	do	do	88 50
640110	do	do	do	11 50
640111	Larkin Wilson	do	do	100 00
640113	Daniel Pope	do	do	300 00
640115	Thomas Bootee	do	do	100 00
640118	Joshua Bryant	do	do	300 00
640120	George Alexander	do	do	100 00
640121	Barker C. Story	do	do	90 89
640122	John A. Metzger	do	do	25 00
640124	Oliver Santon	do	do	100 00
640126	Samuel Allison	do	do	66 67
640128	Frank B. Spring	do	do	100 00
640129	Clarence A. Burtis	do	do	95 94
640134	Thomas O'Hara	do	do	75 00
640135	Alvin Delong	do	do	55 00
640136	Hugh McCormick	do	do	80 00
640143	Adalbert Neuman	do	do	80 00
640147	Richard W. Cheeney	do	do	100 00
640148	Francis E. Tingley	do	do	100 00
640171	Henry Johnson	do	do	190 00
640172	do	do	do	10 00
640175	Pomp Ray	do	do	100 00
640176	Joseph Williams	do	do	100 00
640177	William Elwood	do	do	91 36
640178	do	do	do	8 00
640179	Cager Goldin	do	do	180 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
640180	John W. Holloway	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$300 00		
640184	William Villery	do	do	100 00		
640185	Mark Gordon	do	do	90 00		
640186	do	do	do	10 00		
640189	Albert Bass	do	do	90 00		
640190	do	do	do	10 00		
640191	Miles Christian	do	do	90 00		
640192	do	do	do	10 00		
640197	Stephen Bowder	do	do	100 00		
640198	Parker Jones	do	do	90 00		
640199	do	do	do	10 00		
640200	Costa Lasson	do	do	89 50		
640203	Romulus Bonner	do	do	100 00		
640205	Andrew Holland	do	do	50 00		
640209	Riley Gardner	do	do	89 00		
640210	do	do	do	11 00		
640211	Erastus Northern	do	do	90 00		
640212	do	do	do	10 00		
640213	Alfred McMurry	do	do	100 00		
640216	James H. Jordan	do	do	90 00		
640217	do	do	do	10 00		
640218	Bennett Robbins	do	do	290 00		
640219	do	do	do	10 00		
640220	Silas Haddox	do	do	90 00		
640221	do	do	do	10 00		
640222	John Haddox	do	do	78 50		
640223	do	do	do	7 50		
640224	Charles Pheaney, or Flourney	do	do	90 00		
640225	do	do	do	10 00		
640226	William Ross	do	do	100 00		
640229	Abraham Jones	do	do	100 00		
640261	Costa Lasson	do	do	10 50		
640262	Lazine Freelove	do	do	89 50		
640263	do	do	do	10 50		
640264	Braxton Chenault	do	do	90 00		
640265	do	do	do	10 00		

640266	Cavalla Bates	do	do	90 00
640267	do	do	do	10 00
640268	Henry Asberry	do	do	90 00
640269	do	do	do	10 00
640270	Bluford Blurge	do	do	89 50
640271	do	do	do	10 50
640272	William Barnes	do	do	90 00
640273	do	do	do	10 00
640274	James Cates	do	do	300 00
640276	Alexander Mack	do	do	190 00
640277	do	do	do	10 00
640278	James Edwards	do	do	90 00
640279	do	do	do	10 00
640280	Henry Washington	do	do	90 00
640281	do	do	do	10 00
640284	Samuel Ranty	do	do	100 00
640285	John Cook	do	do	100 00
640286	do	do	do	10 00
640287	Charles Thompson	do	do	90 00
640288	do	do	do	10 00
640289	Yeteman Hambrick	do	do	89 50
640290	do	do	do	10 50
640292	William Small	do	do	189 50
640293	do	do	do	10 50
640294	Jacob Harris	do	do	300 00
640295	Lewis Brown	do	do	89 00
640296	do	do	do	11 00
640297	Albert Brown	do	do	90 00
640298	do	do	do	10 00
640299	Isaac De Lane, *alias* Lane	do	do	100 00
640304	Primus West	do	do	289 00
640305	do	do	do	11 00
640306	Thomas Noel	do	do	88 50
640307	do	do	do	11 50
640308	James Smith	do	do	100 00
640311	Daniel Carter	do	do	100 00
640313	Gabriel Riddle	do	do	100 00
640315	Bartley Staples	do	do	273 20
640316	do	do	do	10 00
640317	Gibbon Sewart	do	do	100 00
640319	Alfred Ewell	do	do	33 33
640320	Nelson Morgan	do	do	100 00
640334	Israel Bensinger	do	do	58 00
640338	William Moss, *alias* Morse	do	do	300 00
640339	Christopher Peterson	do	do	70 08
640340	James Ray	do	do	75 00
640342	George M. Miller	do	do	200 00
640346	Matthew *alias* Mathias Schmidt	do	do	140 00
640348	John Zentner	do	do	100 00
640353	Alfread Swift	do	do	100 00
640355	Denton Botts	do	do	100 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
640356	John Embree	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$100 00		
640357	William S. Kinyon	do	do	35 00		
640359	Ephraim Robinson	do	do	100 00		
640361	George W. Pogue	do	do	11 00		
640362	Samuel Jackson	do	do	189 50		
640365	Sams Edmunson	do	do	90 00		
640366	do	do	do	10 00		
640369	Frank Edmunson	do	do	100 00		
640372	Giles Grant	do	do	200 00		
640373	Reuben Hench	do	do	89 83		
640374	do	do	do	7 50		
640375	John Huston	do	do	200 00		
640377	Henry Jones	do	do	100 00		
640378	Orange Johnson	do	do	21 45		
640379	do	do	do	3 55		
640380	George Kimball	do	do	300 00		
640382	Samuel Jackson	do	do	10 50		
640385	James Barbour	do	do	100 00		
640386	William Buckner	do	do	89 50		
640387	do	do	do	10 50		
640388	George W. King	do	do	100 00		
640390	Charles Meriweather	do	do	300 00		
640391	John Fillmore	do	do	300 00		
640393	Jordan Jackson	do	do	100 00		
640398	Marcus Taylor, *alias* Drake	do	do	169 12		
640399	do	do	do	10 00		
640400	Wilson Cockerill	do	do	180 00		
640402	Annanias Lindsey	do	do	200 00		
640403	John Jarrett	do	do	156 86		
640404	do	do	do	10 00		
640405	Isom Anderson	do	do	90 85		
640406	do	do	do	8 50		
640407	Alexander Kennedy	do	do	89 00		
640408	do	do	do	11 00		
640409	Henry Pickett, *alias* Pickard	do	do	57 67		

640410	....do	....do	....do	9 00
640411	Randal Mercer	....do	....do	100 00
640414	Dennis Mercer	....do	....do	100 00
640417	Peter Johnson	....do	....do	100 00
640419	Richard Sample	....do	....do	275 88
640420	....do	....do	....do	11 00
640421	Bentley Mendenhall	....do	....do	33 33
640422	George B. Moore	....do	....do	60 71
640424	Edward F. Potter	....do	....do	100 00
640425	Manning Drake	....do	....do	60 00
640428	Edward Posson	....do	....do	65 00
640430	William Smith	....do	....do	94 15
640432	David Brott	....do	....do	100 00
640436	Martin Lally	....do	....do	75 00
640438	Henry T. Mitchell	....do	... do	100 00
640440	Hezekiah Basnight	....do	....do	51 47
640443	Starr Hamilton	....do	....do	100 00
640441	Francis C. Husted	....do	....do	100 00
640445	George C. Kline	....do	....do	230 00
640446	William H. Freeman	....do	....do	25 00
640447	Edward F. Hattes	....do	....do	100 00
640449	Louis Buhren	....do	....do	300 00
640450	Edmond Tripp	....do	....do	100 00
640451	Philip McGee	....do	....do	90 00
640452	....do	....do	....do	10 00
640453	Edmund Martin	....do	....do	100 00
640455	David Middleton	....do	....do	300 00
640456	William Wright	....do	....do	62 00
640457	....do	....do	....do	8 00
640458	Isam Henderson	....do	....do	100 00
640461	Robert Gamble	....do	....do	69 77
640462	....do	....do	....do	8 00
640463	Alfred Beatty	....do	....do	66 66
640465	Stephen Beatty	....do	....do	191 84
640466	....do	....do	....do	12 50
640469	John Hamilton	....do	....do	100 00
640473	Carr Trout	....do	....do	100 00
640475	William Phelps	....do	....do	90 00
640476	....do	....do	....do	10 00
640477	Manson Walton	....do	....do	89 50
640478	....do	....do	... do	10 50
640480	Henry Rogers	....do	....do	120 00
640482	George Murry	....do	....do	90 00
640483	....do	....do	....do	10 00
640484	Burgess Mason	....do	....do	190 00
640487	Robert Martin	....do	....do	100 00
640490	George Martin	....do	....do	100 00
640492	Moses Moore	....do	....do	190 00
640493	....do	....do	....do	10 00
640494	Vincent Wallace	....do	... do	300 00
640496	Wilson Walker	....do	....do	90 00
640497	....do	....do	....do	10 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
640498	Richard White	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$88 00		
640499	Shelby Bell	do	do	94 13		
640500	do	do	do	4 27		
640501	William Yates	do	do	90 00		
640502	do	do	do	10 00		
640503	Benjamin Smith	do	do	100 00		
640504	William Linzy	do	do	130 00		
640505	do	do	do	10 00		
640510	George Ellis	do	do	100 00		
640531	Benjamin F. Miller	do	do	75 00		
640534	James T. Doore	do	do	60 00		
640541	Collins Pindell	do	do	25 00		
640542	Adalbert Elmer	do	do	100 00		
640543	Charles McCarty	do	do	100 00		
640547	Samuel Clark	do	do	100 00		
640549	James Christie	do	do	75 00		
640551	Henry H. Carr	do	do	100 00		
640553	George Newman	do	do	100 00		
640556	John Witman	do	do	100 00		
640557	James S. Muchler	do	do	87 96		
640559	Thomas Baker	do	do	100 00		
640562	Harry Smith	do	do	100 00		
640564	Samuel Whitsett	do	do	300 00		
640570	Daniel Arnold	do	do	100 00		
640573	Green McLewee	do	do	100 00		
640575	Jackson Wiles	do	do	289 50		
640576	do	do	do	10 50		
640577	Solomon Brink	do	do	287 50		
640578	do	do	do	12 50		
640579	George Morton	do	do	100 00		
640581	Henry Alexander	do	do	88 50		
640582	do	do	do	11 50		
640583	John Thomas	do	do	88 50		
640584	do	do	do	11 50		
640585	Pleasant Driver	do	do	190 00		

640586	.....do	.....do	....do	10 00
640587	Nabb Kelly	.....do	....do	287 88
640588	.....do	.....do	....do	10 00
640589	General Huff	.....do	....do	190 00
640590	.....do	.....do	....do	10 00
640597	Thomas Thomas	.....do	....do	100 00
640602	Nelson Lackey	.....do	....do	75 00
640606	John J. Wheeler	.....do	....do	25 00
640608	Sylvester Munger	.....do	....do	100 00
640610	Peter B. Perkins	.....do	....do	75 00
640611	William Milligan	.....do	....do	45 00
640613	Benjamin H. Shepard	.....do	....do	100 00
640615	John W. Hess	.....do	....do	74 42
640617	Lindley T. Mayo	.....do	....do	100 00
640621	Peter Simond, or Simon	.....do	....do	100 00
640624	Nicholas Carter	.....do	....do	89 50
640625	.....do	.....do	....do	10 50
640626	Henderson Williams	.....do	....do	100 00
640628	Alexander Harris	.....do	....do	300 00
640630	Nathan Potter	.....do	....do	288 50
640631	.....do	.....do	....do	11 50
640632	Henry Martin	.....do	....do	90 00
640633	.....do	.....do	....do	10 00
640637	Henry Watts	.....do	....do	100 00
640639	Granville English	.....do	....do	100 00
640642	Isaac Scott	.....do	....do	100 00
640644	Sanford Garth	.....do	....do	287 43
640645	.....do	.....do	....do	10 00
640646	Charles Green	.....do	....do	89 50
640647	.....do	.....do	....do	10 50
640648	James White	.....do	....do	79 00
640649	.....do	.....do	....do	7 50
640650	Daniel Bird	.....do	....do	89 00
640665	Simon or Simeon Babcock	.....do	....do	100 00
640667	Hiram Crain	.....do	....do	75 00
640669	Henry Chase	.....do	....do	96 62
640671	Wesley Dimbleby	.....do	....do	100 00
640673	Samuel R. Hunter	.....do	....do	85 94
640679	Isaac T. King	.....do	....do	75 00
640681	Hiram M. Morey	.....do	....do	100 00
640684	Charles Oberst	.....do	....do	100 00
640723	Adam Benninger	.....do	....do	100 00
640725	John Gibbons	.....do	....do	75 00
640727	James Murphy	.....do	....do	100 00
640729	Valentine A. Wise	.....do	....do	100 00
640731	Reuben H. Treaher	.....do	....do	100 00
640733	George W. Smith	.....do	....do	100 00
640737	Greenwood Partridge	.....do	....do	75 00
640740	Thomas Barbee	.....do	....do	100 00
640746	Gottlieb Kuhn	.....do	....do	100 00
640749	William McGriffin	.....do	....do	100 00
640753	Thomas J. Paynter	.....do	....do	75 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
640760	John W. Post	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$75 00		
640762	Hiram Steele	do	do	100 00		
640764	Fidel Shadinger, or Scherzinger	do	do	75 00		
640767	George Williams	do	do	75 00		
640769	Charles A. Bellinger	do	do	100 00		
640772	Samuel R. Cain	do	do	75 00		
640775	John G. Harrington	do	do	75 00		
640783	R. Murray House	do	do	100 00		
640785	Hiram L. Hackett	do	do	100 00		
640788	George Crawford	do	do	75 00		
640791	Joel B. Curtis	do	do	100 00		
640793	Henry Atkins	do	do	100 00		
640797	Israel H. Shepherd	do	do	100 00		
640800	Joseph Meyers	do	do	75 00		
640811	Morris Morton	do	do	75 00		
640821	Daniel Bird	do	do	11 00		
640825	John Govan	do	do	100 00		
640828	Nelson Johnson	do	do	300 00		
640830	Andrew Jackson No. 1	do	do	276 00		
640831	do	do	do	11 50		
640832	Joseph Burton	do	do	89 50		
640833	do	do	do	10 50		
640834	Nathan Kendall	do	do	90 00		
640835	do	do	do	10 00		
640836	George Kendall	do	do	90 00		
640837	do	do	do	10 00		
640838	Henry Watson	do	do	100 00		
640841	Harrison Scott	do	do	100 00		
640844	Shannon Cobb	do	do	290 00		
640845	do	do	do	10 00		
640846	Edward Baylor	do	do	100 00		
640848	Martin Hinkle	do	do	300 00		
640849	Leonard Scott	do	do	100 00		
640853	Solomon Demint	do	do	100 00		
640854	Henry Foster	do	do	220 00		

640857	Plato Watkins	do	do	100 00
640858	Zachariah Burton	do	do	300 00
640860	Albert Jones	do	do	300 00
640861	Oren Betts	do	do	300 00
640866	George E. Smith	do	do	100 00
640869	Washington White	do	do	76 10
640872	Henry Garrard	do	do	98 40
640873	Robert Wait	do	do	90 00
640874	do	do	do	10 00
640877	Benjamin Wilson	do	do	100 00
640878	William Phelps	do	do	189 50
640879	do	do	do	10 50
640882	Isaac Spotts, or Spotz	do	do	100 00
640886	Edward P. Willard	do	do	100 00
640889	Hiram Wormwood	do	do	100 00
640891	John Q. Washburn	do	do	15 00
640895	Richard W. Smith	do	do	40 00
640896	John Moan	do	do	140 00
640897	Edward W. Collins	do	do	100 00
640898	James C. Whittaker	do	do	100 00
640899	Winthrop Low	do	do	75 00
640902	Michael Miller	do	do	100 00
640904	Charles D. Moody	do	do	30 00
640908	Miles F. Wood	do	do	85 00
640910	Don Elias Downing	do	do	100 00
640913	Henry Kelly	do	do	100 00
640919	John Oren	do	do	75 00
640932	Edwin Antisdel	do	do	100 00
640934	Alpheus Lambert	do	do	100 00
640937	Edmond J. or Edwin J. Perkins	do	do	100 00
640939	John A. Shurrum	do	do	300 00
640947	Carie W. Gregory	do	do	100 00
640952	William Likens	do	do	75 00
640957	Joseph Leprell	do	do	100 00
640960	Marcus L. Simons	do	do	100 00
640962	William Seager	do	do	100 00
640964	William Gerold	do	do	100 00
640970	Robert McFarland	do	do	100 00
640979	John R. Bowen	do	do	75 00
640981	Thomas Reiner	do	do	100 00
640985	Elias Pullen	do	do	75 00
640994	Simeon L. Devol	do	do	100 00
640997	Joseph McGraw	do	do	6 56
641000	Israel Ulmer	do	do	100 00
641001	Benton Means	do	do	300 00
641003	Charles Billings, or Billingsley	do	do	88 50
641004	do	do	do	11 50
641005	Henry Warner	do	do	100 00
641009	Mark Smith	do	do	100 00
641012	Alexander Banks	do	do	100 00
641015	Albert Roundtree	do	do	189 00
641016	do	do	do	11 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
641017	Alexander Humbrick	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$89 50		
641018	....do	....do	....do	10 50		
641019	Nathaniel Bishop	....do	....do	190 00		
641020	....do	....do	....do	10 00		
641023	Tilghman Lively	....do	....do	190 00		
641024	....do	....do	....do	10 00		
641025	Thomas King	....do	....do	182 57		
641026	....do	....do	....do	10 00		
641027	Solomon Costar, or Costen	....do	....do	100 00		
641028	James Smith	....do	....do	100 00		
641029	Stearman Hennison	....do	....do	300 00		
641031	George W. Phifer	....do	....do	100 00		
641033	Thomas J. Choate	....do	....do	100 00		
641035	Milton Ladd	....do	....do	100 00		
641037	Kneeland F. Huckaby	....do	....do	100 00		
641039	Erastus Foster	....do	....do	100 00		
641045	Andrew Head	....do	....do	100 00		
641048	William D. Trescott	....do	....do	100 00		
641050	Michael Crone	....do	....do	75 00		
641052	James E. Staup, or Staub	....do	....do	75 00		
641055	Peter Bilby	....do	....do	100 00		
641060	James E. Unks	....do	....do	100 00		
641062	Theodore J. Given	....do	....do	100 00		
641072	Abijah Wilcox	....do	....do	100 00		
641077	George S. Bucher	....do	....do	100 00		
641079	John Bucher	....do	....do	100 00		
641083	Ole Johnson	....do	....do	75 00		
641085	Isaac Oxtoby	....do	....do	100 00		
641087	Frederick Bigler	....do	....do	75 00		
641089	George F. Walker	....do	....do	100 00		
641092	James Williams	....do	....do	100 00		
641093	Patrick Henry	....do	....do	56 72		
641094	....do	....do	....do	7 50		
641095	Irvin Kavanaugh	....do	....do	48 72		
641096	....do	....do	....do	8 00		

641097	Henry Kindred	do	do	90 00
641098	do	do	do	10 00
641099	Hiram Fields	do	do	89 00
641100	do	do	do	9 00
641103	Harry Butts	do	do	100 00
641104	James Richardson	do	do	87 73
641105	do	do	do	9 00
641109	John Turner	do	do	100 00
641114	Wesley Alexander	do	do	100 00
641115	Alfred Jones	do	do	300 00
641116	Ewing Smith	do	do	90 00
641117	do	do	do	10 00
641118	Alfred Payne	do	do	100 00
641119	do	do	do	10 00
641143	William Edgar	do	do	75 00
641144	George M. Rowe	do	do	66 66
641145	Joseph F. Skinner	do	do	300 00
641146	William F. Clark	do	do	100 00
641147	Andrew J. Montanye	do	do	100 00
641149	Kinyon A. Muncy	do	do	100 00
641150	Henry S. Swartwood	do	do	120 09
641151	Darius A. Ide	do	do	32 03
641152	Benjamin J. Wiley	do	do	25 00
641153	Samuel T. Riggs	do	do	35 00
641155	George W. Russell	do	do	100 00
641157	Robert Watson	do	do	75 00
641161	Henry D. Rutherford	do	do	100 00
641163	Isaac F. Tuttle or Tuthill	do	do	66 66
641165	Levi L. Renshaw	do	do	69 79
641167	Philip Hermann	do	do	75 00
641171	Thomas Ryer	do	do	100 00
641183	James F. Knowles	do	do	100 00
641192	Abraham Cherry	do	do	100 00
641195	James Dawson	do	do	300 00
641197	Edward Steele	do	do	100 00
641199	Anthony Townsend	do	do	89 50
641200	do	do	do	10 50
641201	Washington Spencer	do	do	300 00
641203	Spencer Graves	do	do	100 00
641205	James Talbott	do	do	300 00
641209	Morton or Martin Day	do	do	100 00
641210	Alexander Atkinson	do	do	164 53
641211	do	do	do	10 00
641214	Isaac Moseley	do	do	96 46
641215	do	do	do	3 54
641216	Barrick Carraway	do	do	97 48
641217	do	do	do	2 52
641218	Noah Thurston	do	do	94 45
641219	do	do	do	5 55
641220	Samuel Chandler	do	do	81 50
641221	Battese Carey	do	do	89 50
641222	do	do	do	10 50

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
641223	Edward B. Wilson	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$140 00		
641229	Antimore Sallsbury	do	do	100 00		
641232	Pleasant Smith	do	do	89 00		
641233	do	do	do	11 00		
641234	Noah Green	do	do	89 50		
641235	do	do	do	10 50		
641236	James Kimbrough	do	do	200 00		
641237	Charles Davidson	do	do	90 00		
641238	do	do	do	10 00		
641239	Ackerman or Aiken Dawson	do	do	100 00		
641246	Ezekial Davis	do	do	190 00		
641247	do	do	do	10 00		
641248	Frank Daugherty	do	do	90 00		
641249	do	do	do	10 00		
641250	Moses Buck	do	do	77 69		
641255	John Wagner	do	do	100 00		
641256	William Hasford	do	do	100 00		
641257	Sebastian Metzger	do	do	100 00		
641258	John Renter	do	do	87 00		
641259	William H. Stanley	do	do	60 00		
641260	Jefferson Hobbs	do	do	100 00		
641263	Benjamin F. Frost	do	do	100 00		
641265	George Williams	do	do	100 00		
641267	William Hebard	do	do	100 00		
641268	George M. Carr	do	do	75 00		
641273	Edwin J. Loomis	do	do	104 74		
641275	William H. Munsee	do	do	100 00		
641277	William Walker	do	do	100 00		
641279	John Coughlin	do	do	76 91		
641280	Adam Jones	do	do	190 00		
641283	Lewis Schroeder	do	do	100 00		
641284	John White	do	do	100 00		
641290	William A. Hill	do	do	100 00		
641292	Richard W. Lawrence	do	do	75 00		
641294	Leonidas McCullough	do	do	93 40		

641299	John Yetter	do	do	75 00
641302	Frederick Wanger	do	do	100 00
641309	Jacob K. Williams	do	do	100 00
641321	Moses Buck	do	do	7 50
641322	Andrew Allen	do	do	90 00
641323	do	do	do	10 00
641324	Willis Thompson *alias* Tomerson	do	do	78 71
641327	Lytle Starks	do	do	189 00
641328	do	do	do	11 00
641329	Peter Bowers	do	do	250 00
641330	do	do	do	10 00
641333	John Grandison, jr	do	do	100 00
641336	Robins Amos	do	do	100 00
641341	Benjamin Turley or Terrell	do	do	90 00
641342	do	do	do	10 00
641348	William Payne	do	do	300 00
641351	Samuel Chandler	do	do	8 00
641352	Henry Sanders	do	do	300 00
641354	William Brocks	do	do	100 00
641356	Samuel Harris	do	do	100 00
641359	Lover Gay	do	do	100 00
641362	Samuel Mason	do	do	100 00
641366	Fate Arnold	do	do	100 00
641368	Carr Taylor	do	do	90 00
641369	do	do	do	10 00
641370	Clark Witt	do	do	88 50
641371	Thomas B. Powell	do	do	100 00
641374	William H. Clayton	do	do	75 00
641375	Ebony Hurtt	do	do	96 30
641377	Horace L. Weeks	do	do	25 00
641378	David Conn	do	do	100 00
641381	Nelson Croto	do	do	240 00
641382	Albert Taylor	do	do	375 00
641383	James E. Hathaway	do	do	100 00
641385	Isaac G. Smith	do	do	100 00
641391	William J. Oliver	do	do	75 00
641394	Thomas B. Shove	do	do	75 00
641396	Thomas Skelton	do	do	90 35
641399	Alonzo Johnson	do	do	100 00
641401	Philipp Schlemmer	do	do	86 97
641403	John L. Stratton	do	do	100 00
641405	Isaac Cross	do	do	100 00
641409	Joel N. Cummins	do	do	75 00
641410	William A. Branner	do	do	100 00
641425	Alexander Guitar	do	do	100 00
641441	General Fate or Fayette	do	do	300 00
641444	Robert M. Meyers	do	do	100 00
641447	Epaulett Dufriend	do	do	75 00
641450	Peter S. Trephegan	do	do	100 00
641454	Walter D. Gordon	do	do	25 00
641455	James Burke	do	do	240 00
641456	Neils V. Kinsey	do	do	100 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
641457	Henry T. Wisner	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$100 00		
641458	Marvin Welcker	do	do	100 00		
641459	Edwin H. Landback	do	do	100 00		
641462	Charles Peterson	do	do	100 00		
641467	Benjamin J. Beach	do	do	100 00		
641472	Joseph Fuller	do	do	8 53		
641473	Charles Camper	do	do	190 00		
641474	do	do	do	10 00		
641475	Scipio Mitchell	do	do	90 00		
641477	Alfred Snell	do	do	89 50		
641478	do	do	do	10 50		
641479	Allen Clemmons	do	do	90 00		
641480	do	do	do	10 00		
641484	Kinchen Hide No. 1	do	do	20 00		
641487	Joseph Perkins	do	do	289 00		
641488	do	do	do	11 00		
641489	George Powell	do	do	200 00		
641490	Jacob Moody	do	do	100 00		
641495	Nathan Green	do	do	89 50		
641496	do	do	do	10 50		
641500	Cyrus Donel *alias* McGee	do	do	100 00		
641521	Clark Witt	do	do	11 50		
641523	Nicholas Clanch	do	do	100 00		
641526	Ben S. Dixon	do	do	300 00		
641527	Gilbert Hicks	do	do	300 00		
641530	Alexander Robinson	do	do	100 00		
641531	Charles Gorton or Garten	do	do	90 00		
641532	do	do	do	10 00		
641533	Dennis Merril	do	do	82 50		
641534	do	do	do	7 50		
641541	George Demerson	do	do	100 00		
641542	Simon Scippio	do	do	100 00		
641545	Alexander John (Jones)	do	do	100 00		
641548	Massella Cary	do	do	100 00		
641549	Meredith Bennefield *alias* Bedingfield	do	do	290 00		

641550	....do	....do	....do	10 00
641571	Lorenzo Flint	....do	....do	100 00
641577	Joseph Anderson	....do	....do	75 00
641582	Isaac H. Miller	....do	....do	135 00
641584	Henry Irvin	....do	....do	84 03
641586	Charles M. Randall	....do	....do	25 00
641588	Albert F. Mitchell	....do	....do	100 00
641590	John Finley	....do	....do	100 00
641591	Lorin B. Brainard	....do	....do	200 00
641592	Conrad Nickel	....do	....do	100 00
641595	David Emley	....do	....do	100 00
641596	William Altman	....do	....do	100 00
641600	Charles W. Wood	....do	....do	75 00
641601	William A. Bond	....do	....do	100 00
641618	David Lloyd	....do	....do	100 00
641620	Charles E. Chaffee	....do	....do	100 00
641622	Charles S. Chrisman	....do	....do	100 00
641624	Joel Whiteside	....do	....do	100 00
641627	Nelson Row	....do	....do	75 00
641630	Thomas E. Lytle	....do	....do	100 00
641631	William H. Hodges	....do	....do	100 00
641634	Thomas Allen	....do	....do	100 00
641638	Thomas Donnell	....do	....do	100 00
641640	George Ives	....do	....do	100 00
641641	David Breese	....do	....do	100 00
641642	William Hull	....do	....do	100 00
641645	Royal A. Smith	....do	....do	100 00
641648	John Baier	....do	....do	100 00
641650	W. F. King	....do	....do	100 00
641655	John Couplin	....do	....do	100 00
641660	John H. Cooper	....do	....do	100 00
641664	Isaac Dent	....do	....do	100 00
641667	Hardin Dougherty	....do	....do	90 00
641668	....do	....do	....do	10 00
641669	Thomas Lander, 1st	....do	....do	88 50
641670	....do	....do	....do	11 50
641671	James Grinnell	....do	....do	88 50
641672	....do	....do	....do	11 50
641673	Richard Jones	....do	....do	90 00
641674	....do	....do	....do	10 00
641679	Milton Cason	....do	....do	90 00
641680	....do	....do	....do	10 00
641681	White McCown	....do	....do	90 00
641682	....do	....do	....do	10 00
641687	John Ford	....do	....do	89 50
641688	....do	....do	....do	10 00
641689	Cato Hughes	....do	....do	248 00
641690	....do	....do	....do	12 00
641691	Joseph Shannon	....do	....do	100 00
641695	James Richards	....do	....do	100 00
641697	William V. Nave	....do	....do	100 00
641699	Henry Look	....do	....do	100 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
641701	John Hicks	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$100 00		
641705	Anderson D. Hainline	do	do	100 00		
641710	Frederick Hucksold	do	do	100 00		
641713	John R. Sitton	do	do	100 00		
641715	Samuel Peery	do	do	100 00		
641717	Charles Crouse	do	do	100 00		
641719	John J. Hill	do	do	100 00		
641751	Wyllys A. Chapman	do	do	100 00		
641758	Variance Bergeon	do	do	100 00		
641759	John Brennan	do	do	100 00		
641760	Elias W. Folsom	do	do	100 00		
641763	Solomon Reynolds	do	do	100 00		
641765	August Oaks	do	do	69 80		
641766	do	do	do	8 50		
641769	William Adams	do	do	200 00		
641770	Parker Huff	do	do	25 00		
641772	John Walker	do	do	190 00		
641773	Green Wells	do	do	190 00		
641774	do	do	do	10 00		
641778	Edmond Burness	do	do	75 25		
641779	do	do	do	8 50		
641782	William Miller	do	do	190 00		
641783	do	do	do	10 00		
641784	Anthony Fletcher	do	do	89 00		
641785	do	do	do	11 00		
641786	David Brodens	do	do	89 50		
641787	do	do	do	10 50		
641788	Green Custard	do	do	100 00		
641789	Solomon Nichols	do	do	100 00		
641790	Charles Gant	do	do	89 50		
641791	Henry M. Graham	do	do	18 72		
641792	Joseph S. Graham	do	do	18 75		
641793	James L. Graham	do	do	25 00		
641794	William H. Gobles	do	do	100 00		
641795	Edson Squires	do	do	22 22		

641796	George H. Burrows	do	do	100 00
641797	Isaac Hartman	do	do	100 00
641798	James Vandine	do	do	100 00
641800	Edwin Bruce	do	do	100 00
641801	Morgan Snell	do	do	100 00
641805	Henry M. Rouse	do	do	100 00
641808	William Johnson	do	do	75 00
641813	Henry V. McGlaughlin	do	do	340 00
641819	Benjamin F. Potter	do	do	75 00
641821	James Sanders	do	do	88 75
641822	do	do	do	11 25
641823	Allen Newhouse	do	do	100 00
641826	Hillington Perkins	do	do	89 50
641827	do	do	do	10 50
641828	James Montgomery	do	do	20 12
641833	Alexander Smith	do	do	50 00
641836	George McNeil	do	do	100 00
641839	Joseph Shipley	do	do	90 00
641840	do	do	do	10 00
641841	Joseph Tilley	do	do	89 50
641842	do	do	do	10 50
641843	John Prudhomme or Prudein	do	do	100 00
641845	George Lavenshouse	do	do	200 00
641846	William Lyons	do	do	300 00
641848	Charles Black	do	do	100 00
641852	Isaac P. Fudge	do	do	100 00
641855	Samuel M. Donaldson	do	do	100 00
641858	Thomas O'Malley	do	do	100 00
641859	Eli Wright	do	do	300 00
641862	Joseph Stockbridge	do	do	93 38
641864	Luther Haynes	do	do	100 00
641865	Patrick Murphy	do	do	95 18
641866	William D. Ritter	do	do	340 00
641869	John Moss	do	do	59 29
641870	John Henley	do	do	100 00
641871	Mark Brownell	do	do	25 00
641872	William W. Bagley	do	do	16 67
641874	John Brady	do	do	30 00
641875	John Headland	do	do	115 00
641876	Artemus A. Gibson	do	do	100 00
641877	W. H. H. Goolsby	do	do	100 00
641878	Edward Gray	do	do	100 00
641879	Walter Goodenough	do	do	100 00
641880	Frank Don Carlos	do	do	100 00
641882	John Bailey, jr	do	do	100 00
641883	Samuel Brown	do	do	126 66
641884	Samuel Rathbone	do	do	75 00
641887	John Parlett	do	do	100 00
641888	Calvin B. Myers	do	do	100 00
641889	John McPherson	do	do	45 00
641890	Benjamin Sago	do	do	100 00
641891	P. J. Leonard	do	do	100 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
641892	Enoch K. Kent	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$113 33		
641893	Edwin A. Johnson	do	do	100 00		
641894	George W. Vertz	do	do	100 00		
641896	Henry Fitch	do	do	100 00		
641899	Jacob Shelburne	do	do	340 00		
641904	Linsey Creamens	do	do	100 00		
641906	Richard A. Tucker	do	do	100 00		
641908	Isaac Tucker	do	do	86 00		
641911	Madison Dass	do	do	100 00		
641917	John C. Stahel	do	do	33 33		
641919	Thomas J. Burnett	do	do	60 02		
641925	George Weyer or George W. Ware	do	do	100 00		
641927	Samuel Conn	do	do	100 00		
641935	Joseph Wenman	do	do	100 00		
641951	Charles Gant	do	do	10 50		
641952	Isaac Young	do	do	87 50		
641953	do	do	do	12 50		
641954	John Witt	do	do	83 53		
641955	do	do	do	9 00		
641956	Franklin Donnall	do	do	300 00		
641958	Robert Young	do	do	89 50		
641959	do	do	do	10 50		
641962	Joseph Derall	do	do	100 00		
641963	Albert Dempsey	do	do	89 50		
641964	do	do	do	10 50		
641965	Lloyd Smith	do	do	10 50		
641968	George Lovelace	do	do	100 00		
641969	Alfred Clark	do	do	289 50		
641970	do	do	do	10 50		
641973	Joseph Hamilton	do	do	100 00		
641976	Henry M. Clannahan	do	do	100 00		
641979	Reuben Lee	do	do	100 00		
641982	Henry Purnell	do	do	90 00		
641983	do	do	do	10 00		
641984	Sidney Whaley	do	do	190 00		

641985	....do	....do	....do	10 00
641988	Goodwin McLin	....do	....do	100 00
641991	Governor Carroll	....do	....do	82 50
641992	....do	....do	....do	7 50
641994	Frank Lipscomb	....do	....do	277 50
641995	....do	....do	....do	11 00
641996	Ellis Nelson	....do	....do	100 00
641999	Shepard Hargus	....do	....do	82 50
642000	....do	....do	....do	7 50
642001	Thomas McGruder	....do	....do	100 00
642003	Robert Munday	....do	....do	100 00
642007	Stephen Little	....do	....do	100 00
642031	Thomas Carroll	....do	....do	100 00
642033	Charles Ruddick	....do	....do	100 00
642035	Brice McCoy	....do	....do	100 00
642042	Napoleon D. Brown	....do	....do	100 00
642044	Peter Bischoff	....do	....do	100 00
642046	John Erwin	....do	....do	95 20
642047	James Lamont	....do	....do	100 00
642051	William E. Swap	....do	....do	100 00
642054	John Looker	....do	....do	200 00
642057	Joseph Hilbi	....do	....do	100 00
642061	Frank Mansfield	....do	....do	100 00
642062	Joseph Coons	....do	....do	90 00
642063	....do	....do	....do	10 00
642066	Lewis Shobe	....do	....do	100 00
642068	Willis Ellis	....do	....do	100 00
642069	John Patterson	....do	....do	300 00
642077	Samuel White, 2d	....do	....do	90 00
642078	....do	....do	....do	10 00
642079	George Fields	....do	....do	87 00
642080	....do	....do	....do	13 00
642081	George Nugin	....do	....do	90 00
642082	....do	....do	....do	10 00
642083	Henry Breckenridge	....do	....do	100 00
642085	James Taylor	....do	....do	300 00
642089	Hise Sanders	....do	....do	88 50
642090	....do	....do	....do	11 50
642092	Joseph Amon	....do	....do	100 00
642093	Daniel T. or Daniel F. Eldridge	....do	....do	100 00
642094	John F. Cornell	....do	....do	33 33
642095	Travis Elmore	....do	....do	100 00
642096	Abner C. Arnold	....do	....do	100 00
642097	Henry W. Beers	....do	....do	100 00
642098	Nathan D. Pierce	....do	....do	100 00
642099	James Fleet	....do	....do	100 00
642100	Augustus Laubee	....do	....do	100 00
642101	David Endy	....do	....do	100 00
642104	Joseph D. Linder	....do	....do	25 00
642106	William H. Moulton	....do	....do	25 00
642109	Henry H. Beach	....do	....do	100 00
642116	Marcus L. Runyan	....do	....do	75 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
642122	Thomas L. Allison	Bonnty to volunteers and their widows and legal heirs.	1871 and prior years.	$100 00		
642124	George W. Murdock	do	do	25 00		
642125	William F. Blaisdell	do	do	60 00		
642127	Mathew Fitzgerald	do	do	100 00		
642128	George W. Wells	do	do	140 00		
642129	Henry S. Coyle	do	do	100 00		
642147	John Warner	do	do	100 00		
642149	Richard Parr	do	do	75 00		
642151	Ogden Hoffman	do	do	100 00		
642153	Solomon Click	do	do	75 00		
642154	Charles L. Speight	do	do	75 00		
642158	William Wing	do	do	100 00		
642160	David Swarthout	do	do	100 00		
642162	George W. Soper	do	do	100 00		
642164	David Bush	do	do	100 00		
642167	William Barber	do	do	100 00		
642172	Samuel M. Patterson	do	do	100 00		
642174	William C. Everest	do	do	100 00		
642180	John Daggett	do	do	100 00		
642182	Ericus Kniese	do	do	100 00		
642185	Robert L. Phillips	do	do	100 00		
642188	Raimund Michael	do	do	100 00		
642189	W. R. Wolfkill	do	do	100 00		
642201	Peter Gillis	do	do	190 00		
642202	do	do	do	10 00		
642203	Alexander Smith	do	do	100 00		
642206	Ransom Hudgins	do	do	100 00		
642209	Adison Johnson	do	do	89 50		
642210	do	do	do	10 50		
642211	Aaron Long	do	do	100 00		
642213	Clayborne Allen	do	do	89 00		
642214	do	do	do	11 00		
642215	Willis or William Farley	do	do	90 00		
642216	do	do	do	10 00		
642217	Richard Wright	do	do	100 00		

642219	Dennis Johnson	do	do	300 00
642220	Henry Robertson	do	do	89 50
642221	do	do	do	10 50
642222	Robert Gibson	do	do	100 00
642225	Alfred Parks	do	do	92 07
642226	do	do	do	7 50
642229	Robert Turpin	do	do	88 20
642230	do	do	do	11 80
642234	Peter Paul Winslow	do	do	100 00
642240	John H. Archer	do	do	220 00
642241	Jerome Maltby	do	do	75 00
642244	Scribner Cates	do	do	240 00
642245	Thomas S. Hathaway	do	do	100 00
642248	Henry Shea	do	do	100 00
642258	Robert O. Wilson	do	do	100 00
642260	Daniel L. Jackman	do	do	270 69
642265	Iredell R. Allgood	do	do	100 00
642271	Napoleon Buonaparte, *alias* Wells	do	do	89 50
642272	do	do	do	10 50
642373	James Sullinger	do	do	200 00
642276	Reuben Carter	do	do	93 35
642277	Frank or Francis Moore	do	do	300 00
642281	Levi Smith	do	do	98 01
642284	Rolla Cole	do	do	100 00
642287	Edward Johns or Jons	do	do	100 00
642291	Solomon Wilson	do	do	84 36
642294	Henry Jones	do	do	100 00
642297	Henry Clay	do	do	300 00
642298	Jefferson Grigsby	do	do	90 00
642299	do	do	do	10 00
642300	Samuel Baines or Bayne	do	do	90 00
642302	Jesse Jones	do	do	100 00
642307	Gotthard Klingg	do	do	100 00
642315	James C. McMann or James McMahon	do	do	100 00
642318	George W. Asley or Ashley	do	do	100 00
642325	William H. Dayle	do	do	69 68
642329	William Buckley	do	do	160 00
642333	Merriman Rees or Reed	do	do	100 00
642335	James W. Walker	do	do	100 00
642336	Charles Monday	do	do	78 60
642337	do	do	do	9 00
642342	William Coffee	do	do	100 00
642343	Pleasant James	do	do	10 00
642347	Joshua Helm	do	do	88 50
642348	do	do	do	11 50
642352	Edward Moberly	do	do	100 00
642353	Thomas Francis	do	do	80 50
642354	do	do	do	9 50
642355	James Campbell	do	do	287 00
642356	do	do	do	13 00
642357	Madison Bell	do	do	19 00
642358	do	do	do	6 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
642359	Solomon Peoples	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$300 00		
642361	Jefferson Lee	do	do	140 00		
642363	Joseph A. Brown	do	do	75 00		
642365	William Shallmeyer	do	do	100 00		
642366	John C. Evans	do	do	90 49		
642367	William R. Witherbee	do	do	100 00		
642368	A. B. Coggeshall	do	do	68 98		
642370	Christopher Hollywood	do	do	44 08		
642377	Joseph W. Hall	do	do	75 00		
642378	James Leviness	do	do	75 00		
642379	Charles Lafferty	do	do	290 00		
642380	John Thompson	do	do	55 00		
642385	Pressly M. Kane	do	do	75 00		
642390	Samuel B. Shadle	do	do	100 00		
642403	William B. Taylor	do	do	100 00		
642404	Eli Sharp	do	do	100 00		
642406	Augustus Meehan	do	do	100 00		
642409	Gilbert Teachout	do	do	75 00		
642411	Hugh P. Hoare	do	do	75 07		
642415	Isaac N. Earl	do	do	100 00		
642417	James H. Madden	do	do	100 00		
642418	Eli Hartley	do	do	100 00		
642420	Notley H. Thrasher	do	do	100 00		
642421	Peter Wilson	do	do	100 00		
642424	George Cook	do	do	100 00		
642426	George M. Evans	do	do	100 00		
642428	Edward Simpson	do	do	100 00		
642131	Robert Ingram	do	do	300 00		
642433	John Fitzpatrick	do	do	100 00		
642435	William Beauchamp	do	do	89 00		
642436	do	do	do	11 00		
642437	Perry Alexander	do	do	90 00		
642438	do	do	do	10 00		
642439	William Hancock	do	do	100 00		
642442	Jacob Miller	do	do	100 00		

642447	Morgan Gaines	do	do	189 00
642448	do	do	do	11 00
642449	William Robinson	do	do	300 00
642451	Benjamin Honeycutt	do	do	300 00
642453	James Brown	do	do	100 00
642454	John Valentine	do	do	290 00
642455	do	do	do	10 00
642458	James Lockhard	do	do	100 00
642459	Charles Stoveall	do	do	90 00
642460	do	do	do	10 00
642464	David Springstead	do	do	100 00
642469	William Perry	do	do	78 61
642472	Leonard W. Carpenter	do	do	100 00
642474	John A. Hoff	do	do	100 00
642478	Daniel Butler	do	do	75 00
642480	Andrew Davidson	do	do	5 57
642488	John P. Trumbell	do	do	75 00
642491	Lumb Richards	do	do	89 00
642492	do	do	do	11 00
642493	Harrison Merrett or Merriatt	do	do	90 00
642494	do	do	do	10 00
642495	John Taylor	do	do	100 00
642497	John Peters	do	do	300 00
642501	William H. Curtis	do	do	100 00
642504	Charles Anderson	do	do	300 00
642506	James Williams	do	do	287 00
642508	John Walker	do	do	10 00
642510	Lewis Page	do	do	100 00
642522	William Smith	do	do	100 00
642523	Levi F. Whiting	do	do	108 33
642524	Oliver F. Burlingame	do	do	75 00
642536	Elijah B. Hastings	do	do	100 00
642540	John Bothast	do	do	60 00
642542	Samuel Martin	do	do	45 00
642561	Samuel Baines or Bayne	do	do	10 00
642569	Columbus Lenoir or Lenore	do	do	7 50
642585	John Lines	do	do	75 00
642587	Wesley C. Williams	do	do	100 00
642598	Jacob C. Kintner	do	do	50 00
642601	Herman Lynn	do	do	62 36
642603	Lewis H. Cushman	do	do	90 10
642605	Miles C. Cristy	do	do	75 00
642607	John E. Musselman	do	do	100 00
642609	Benjamin E. Blackstone	do	do	70 22
642613	Henry Mott	do	do	75 00
642615	Charles Taylor	do	do	100 00
642624	Thomas Goodwin	do	do	100 00
642627	Peter Baker	do	do	90 00
642628	do	do	do	10 00
642629	Allen Brand	do	do	90 00
642630	do	do	do	10 00
642631	John E. Harkness	do	do	75 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
642633	Philip Adler	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$75 00		
642635	Oscar Willard	do	do	75 00		
642637	James M. Wheat	do	do	75 00		
642639	Winfield S. Kingsbury	do	do	100 00		
642641	John Johnson	do	do	100 00		
642643	Abram Ingram	do	do	100 00		
642645	Charles S. Gilbert	do	do	75 00		
642650	Alfred Koontz	do	do	100 00		
642652	Charles W. McMann	do	do	100 00		
642654	Joseph S. English	do	do	100 00		
642657	Benjamin F. Page	do	do	100 00		
642659	Alexander McNear	do	do	100 00		
642661	Clayton Reeves	do	do	100 00		
642663	George Henderson	do	do	100 00		
642670	Reuben Johnson	do	do	100 00		
642673	Frank Penrose	do	do	100 00		
642676	Levi Watson	do	do	100 00		
642679	King Andon	do	do	300 00		
642681	Preston Woods	do	do	100 00		
642683	John Henry	do	do	100 00		
642684	Henry Gordon	do	do	58 11		
642685	Edward Marshall	do	do	100 00		
642688	Joseph Thomas	do	do	300 00		
642690	Lewis Fortune	do	do	100 00		
642691	Anthony Hannappel	do	do	100 00		
642693	Henry Griffeth	do	do	100 00		
642695	John McCarrick	do	do	60 00		
642697	Thomas Holland	do	do	75 00		
642702	James H Jones	do	do	100 00		
642703	Christian Erkenbrecher	do	do	100 00		
642705	David M. Coate	do	do	200 00		
642706	Nicholas Washburn	do	do	100 00		
642707	William Yngling	do	do	100 00		
642708	Jonathan W. McKinney	do	do	77 78		
642710	Aaron Vandike	do	do	100 00		

642712	Ebenezar Westwood	....do	....do	240 00
642715	Benjamin D. Landon	....do	....do	120 00
642717	Alexander McMurtrie	....do	....do	100 00
642719	Joseph Wood	....do	....do	290 00
642720	Henry P. Pyle	....do	....do	83 34
642723	Joseph Frehlich *alias* Horwedel	....do	....do	100 00
642727	John Urich	....do	....do	100 00
642731	James Jones	....do	....do	66 66
642733	Hiram H. Lowe	....do	....do	69 14
642735	Oscar King	....do	....do	100 00
642740	James P. Turner	....do	....do	100 00
642741	Sylvester A. Weldy	....do	....do	50 00
642748	William Sams	....do	....do	100 00
642753	Charles F. Bennett	....do	....do	100 00
642759	Constantine W. E. Lytle	....do	....do	240 00
642761	Samuel W. Foster	....do	....do	89 34
642764	Philip A. Howe	....do	....do	75 00
642771	Lewis Smith	....do	....do	90 00
642772	....do	....do	....do	10 00
642773	Albert Tingle	....do	....do	90 00
642774	.... do	....do	....do	10 00
642775	Valley Cromwell	....do	....do	300 00
642776	George Lowell *alias* Flemming	....do	....do	100 00
642779	Richard Lawrence	....do	....do	285 10
642780	....do	....do	....do	11 00
642783	Henry Jones	....no	....do	33 80
642785	Nelson Matthews	....do	....do	100 00
642788	Leroy Erwin or Irvin	....do	....do	100 00
642791	Henderson Smith	....do	....do	295 00
642792	....do	....do	....do	5 00
642793	Henry Green	....do	....do	100 00
642798	George Bryant	....do	....do	100 00
642809	Henry C. Smith	....do	....do	75 00
642811	Edward Crutchfield	....do	....do	100 00
642813	Uriah Gress	....do	....do	90 00
642815	Gilman Hall	....do	....do	75 00
642830	Hiram Hatch	....do	....do	100 00
642837	William F. Joslin	....do	....do	100 00
642841	Henry Belzer	....do	....do	300 00
642843	George W. Phillips	....do	....do	100 00
642844	John Wallace	....do	....do	40 00
642845	William R. Kress	....do	....do	100 00
642850	William E. Gates	....do	....do	100 00
642853	Robert Preston	....do	....do	75 00
642854	Andrew J. Chovin	....do	....do	75 00
642857	Alexander Du Peel	....do	....do	55 00
642858	John A. Gregg	....do	....do	100 00
642860	John M. Widby *alias* John H. Moore	....do	....do	75 00
642863	Andrew Inhoff	....do	....do	66 67
642880	Frank Taxter	....do	....do	100 00
642891	John Munster, jr	....do	....do	75 00
642895	Francis N. Rhoades	....do	....do	100 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
642897	Luther S. Pitcher	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$100 00		
642904	John F. Mackey	do	do	75 00		
642906	John Johnson	do	do	100 00		
642908	John Thompson	do	do	100 00		
642910	John H. Groner	do	do	105 00		
642917	James F. Putnam	do	do	75 00		
642919	Abram Horning	do	do	100 00		
642921	Thomas T. Crawford	do	do	100 00		
642925	William D. Mingee	do	do	24 76		
642930	Isaac Isard	do	do	300 00		
642932	Frederick Scheifelbein	do	do	100 00		
642936	Adam Bay	do	do	100 00		
642938	Sanford Glass	do	do	100 00		
642940	Jesse Rote	do	do	100 00		
642945	Samuel C. Parker	do	do	100 00		
642947	William Rickman	do	do	100 00		
642955	Carl Steinbrenner	do	do	100 00		
642957	Peter W. Drew	do	do	75 00		
642962	Ephraim C. Moss	do	do	100 00		
642980	Robert Dwyer	do	do	100 00		
642983	Samuel Keach	do	do	100 00		
642985	George Wilson	do	do	89 00		
642986	do	do	do	11 00		
642989	James C. Strong	do	do	300 00		
642991	Martin Pillen	do	do	187 50		
642992	do	do	do	12 50		
642995	George Kelley	do	do	90 00		
642996	do	do	do	10 00		
642997	Lewis Richards	do	do	100 00		
643000	John Wesley	do	do	100 00		
643003	Thomas Benton	do	do	100 00		
643006	Hugh F. Wheeler	do	do	100 00		
643007	Thomas Fields	do	do	89 00		
643008	do	do	do	11 00		
643009	William H. Powell	do	do	89 00		

643010	....do	....do	....do	11 00
643011	John Fitzgerald	....do	....do	50 00
643012	Levi W. Powles	....do	....do	75 00
643014	Cornelius or Cornilea W. Anderson	....do	....do	100 00
643015	Michael Cain	....do	....do	100 00
643017	John Malott	....do	....do	100 00
643019	Patrick Liddy	....do	....do	75 00
643021	John Masterton	....do	....do	100 00
643022	Samuel Swihart	....do	....do	100 00
643028	William Parrish	....do	....do	100 00
643030	Moses Strawn	....do	....do	95 24
643031	George R. Smith	....do	....do	100 00
643032	John Crozier	....do	....do	100 00
643033	Myron W. Cross	....do	....do	100 00
643034	James M. Witherspoon	....do	....do	100 00
643035	Elijah Winters	....do	....do	120 00
643037	George E. Morris	....do	....do	100 00
643039	Daniel B. Cochran	....do	....do	100 00
643046	Harman Tyner	....do	....do	100 00
643047	Marmaduke Dent	....do	....do	100 00
643049	William F. Schroeder	....do	....do	100 00
643051	R. H. Martin	....do	....do	100 00
643052	George Kinsler	....do	....do	25 00
643053	Henry E. Pettit	....do	....do	100 00
643054	Warren White	....do	....do	100 00
643055	Leander Miller	....do	....do	100 00
643056	John O. Laughlon	....do	....do	100 00
643057	John Enos	....do	....do	100 00
643061	William H. Jackson	....do	....do	100 00
643066	James Snyder	....do	....do	100 00
643067	Patrick Burke	....do	....do	100 00
643069	Daniel Walrath	....do	....do	100 00
643070	John Lynch	....do	....do	100 00
643073	Andrew Smith	....do	....do	100 00
643075	James Rambaugh	....do	....do	300 00
643077	Dick Hinkston	....do	....do	100 00
643079	Simon Dayton	....do	....do	89 00
643080	....do	....do	....do	11 00
643082	William Flanigan	....do	....do	100 00
643084	Levi S. Beemer	....do	....do	100 00
643086	James Hagadorn	....do	....do	100 00
643087	Charles W. Wheeler	....do	....do	100 00
643088	William W. Keifer	....do	....do	100 00
643089	Ensign L. Pettengill	....do	....do	100 00
643092	William Barry	....do	....do	100 00
643094	Henry March	....do	....do	100 00
643097	Ernest Korty	....do	....do	100 00
643099	William M. Spayd	....do	....do	75 00
643101	Abram M. Van Amburgh	....do	....do	100 00
643105	Frederick Heidelmann	....do	....do	100 00
643107	Nelson Abrams	....do	....do	100 00
643111	William Moorhead *alias* Nudder	....do	....do	90 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
643112	William Moorhead *alias* Nudder	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$10 00		
643113	Alfred Posten	....do	....do	100 00		
643114	Benjamin Morton *alias* Woodson	....do	....do	89 00		
643115	....do	....do	....do	11 00		
643117	Edwin Lewis	....do	....do	90 25		
643118	....do	....do	....do	8 50		
643119	Samuel Patterson	....do	....do	200 00		
643121	Green Buckner	....do	....do	290 00		
643122	....do	....do	....do	10 00		
643123	James Scott	....do	....do	100 00		
643125	Bruce Russell *alias* Chestnut	....do	....do	100 00		
643126	Alfred Reynolds	....do	....do	100 00		
643129	Henry Clay	....do	....do	290 00		
643130	....do	....do	....do	10 00		
643131	Barney Toney	....do	....do	300 00		
643135	John Jones	....do	....do	100 00		
643138	Sandy Morgan	....do	....do	300 00		
643140	Charles Smith	....do	....do	275 77		
643141	Charles Deshay	....do	....do	300 00		
643143	Preston Magrew	....do	....do	100 00		
643145	Harry Walker	....do	....do	100 00		
643151	Paul Schleiffarth	....do	....do	400 00		
643159	John W. Roach	....do	....do	100 00		
643171	Charles Smith	....do	....do	75 00		
643175	William E. Griffin	....do	....do	100 00		
643177	Joseph D. Hallock	....do	....do	100 00		
643181	Patrick King	....do	....do	100 00		
643186	Winslow A. Ramsdell	....do	....do	5 00		
643189	Peter Brummer	....do	....do	100 00		
643190	Benjamin F. Miller	....do	....do	100 00		
643195	Almon P. Fern	....do	....do	100 00		
643197	Martin Madden	....do	....do	100 00		
643199	Calvin Cassell	....do	....do	100 00		
643200	William Edwards	....do	....do	100 00		
643205	Thomas J. Lister	....do	....do	100 00		

643213	Douglass Morton	do	do	100 00
643219	Abraham Ford	do	do	100 00
643232	John W. Patterson	do	do	25 00
643236	Joseph Smith	do	do	200 00
643237	Sherman Walker	do	do	89 75
643238	do	do	do	10 25
643239	John Brown Sitters *alias* John Brown	do	do	100 00
643241	Lyman Lawrence	do	do	189 00
643242	do	do	do	11 00
643243	Horace Matthews	do	do	189 00
643244	do	do	do	11 00
643245	James Rutledge	do	do	200 00
643247	Robert Pinckett	do	do	100 00
643248	Shadrack Shelton	do	do	90 00
643249	do	do	do	10 00
643250	Josiah Hasbrook	do	do	33 33
643252	George Fry	do	do	89 50
643253	do	do	do	10 50
643254	William Porter	do	do	100 00
643257	Henry Duval	do	do	100 00
643260	Henry Hughes	do	do	300 00
643261	Henry E. Harvey	do	do	75 00
643265	Henry G. Jones	do	do	100 00
643266	Charles S. Ayers	do	do	100 00
643271	Charles Green	do	do	300 00
643275	John Skinner	do	do	100 00
643276	Ira Whidby	do	do	89 50
643277	do	do	do	10 50
643278	Taft Godfrey	do	do	100 00
643279	Joshua Fosey	do	do	100 00
643281	Newlon Penny	do	do	100 00
643283	Henry Everding	do	do	100 00
643284	Frederick L. Lynes	do	do	100 00
643293	William H. Doolittle	do	do	75 00
643296	Charles M. Caswell	do	do	100 00
643312	Henry W. Kruse	do	do	100 00
643314	Alonzo A. Freeman	do	do	75 00
643317	William H. Henry	do	do	75 00
643319	A. Alonzo Craw	do	do	100 00
643320	James Austin	do	do	100 00
643321	James G. Cummings	do	do	100 00
643323	Augustine A. Eaton	do	do	100 00
643330	John Murray	do	do	75 00
643331	George W. Baker	do	do	100 00
643333	Hugh H. Cunningham	do	do	75 00
643334	Daniel Cartwright	do	do	100 00
643374	Peter Rourke	do	do	100 00
643375	Robert Murray	do	do	100 00
643376	William W. Thornton	do	do	62 50
643377	Samuel Gibson	do	do	75 00
643379	Samuel Moyer	do	do	100 00
643380	John W. Foster	do	do	100 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
643385	Joseph Miller	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$75 00		
643397	Myron Pinckerton	do	do	100 00		
643402	Henry Dudley	do	do	100 00		
643404	Burgess Mason	do	do	10 00		
643407	Byron Foman	do	do	100 00		
643408	Joseph Crucker	do	do	100 00		
643412	William Tibbs	do	do	100 00		
643415	Dillard Coleman	do	do	100 00		
643417	Richard Lee	do	do	100 00		
643418	Horace Middleton	do	do	89 00		
643419	do	do	do	11 00		
643420	Watson Walker	do	do	100 00		
643422	James Gilchrist	do	do	300 00		
643424	Syp Timbuss	do	do	94 00		
643425	do	do	do	6 00		
643428	Aaron Robinson	do	do	90 00		
643429	do	do	do	10 00		
643430	Thomas Gill	do	do	89 50		
643435	William L. McGary	do	do	115 00		
643443	Jasper Florey	do	do	133 87		
643445	Jesse M. or Robert M. McCan	do	do	100 00		
643447	Robert G. Miller	do	do	200 00		
643461	Henry Couton, *alias* Cowden	do	do	100 00		
643462	Joseph Bingham	do	do	90 00		
643463	do	do	do	10 00		
643464	George Grierson	do	do	100 00		
643469	Nathan Bird	do	do	189 00		
643470	do	do	do	11 00		
643471	Thomas Powell	do	do	300 00		
643472	James Newton	do	do	100 00		
643475	Lawson Peace	do	do	89 50		
643476	do	do	do	10 50		
643478	William Layton	do	do	100 00		
643481	Lewis Henry	do	do	71 50		
643484	Tillam Gillam	do	do	100 00		

643487	Edgar Jones	do	do	100 00
643490	Willis Birdsole	do	do	100 00
643491	George Dix	do	do	300 00
643492	Monroe Willis	do	do	100 00
643495	Albert McWherry	do	do	80 00
643496	do	do	do	10 00
643497	Richard Wait	do	do	90 00
643498	do	do	do	10 00
643499	Frank Garver	do	do	90 00
643500	do	do	do	10 00
643501	Henry Tompkins	do	do	90 00
643502	do	do	do	10 00
643503	Dennis Fisher	do	do	31 00
643504	do	do	do	5 00
643505	Thornton Hunter	do	do	75 00
643508	Holmes Warren	do	do	90 70
643509	do	do	do	7 50
643510	George Pipes	do	do	90 00
643511	do	do	do	10 00
643512	James Irvine	do	do	90 00
643513	do	do	do	10 00
643514	Samuel Townsend	do	do	90 00
633515	do	do	do	10 00
643516	James H. Burks	do	do	90 00
643517	do	do	do	10 00
643518	Wilson Burks	do	do	90 00
643519	do	do	do	10 00
643520	George Burks	do	do	90 00
643521	Thomas Gill	do	do	10 50
643522	Ben Harper	do	do	100 00
643523	Robert Dixon	do	do	90 00
643524	do	do	do	10 00
643525	George W. Howard	do	do	100 00
643527	Thomas Stovall or Stoveall	do	do	87 50
643528	do	do	do	12 50
643529	Rilew Ballew or Burlow	do	do	100 00
643556	Edward Bell	do	do	25 00
643539	Martin Edwards	do	do	100 00
643540	Peter Early	do	do	90 00
643541	do	do	do	10 00
643544	London Barrett	do	do	100 00
643547	John Davis	do	do	100 00
643550	Daniel Tucker	do	do	100 00
643551	Morris Davis	do	do	190 00
643552	do	do	do	10 00
643553	Isidore J. Kinney	do	do	100 00
643558	Young Botts	do	do	100 00
643562	Isaac Maxwell	do	do	100 00
643567	Edward Mitchell	do	do	300 00
643570	George I. Crawford	do	do	300 00
643572	Jordan Talkidon	do	do	300 00
643577	Robert Alexander	do	do	190 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
643578	Robert Alexander	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$10 00		
643579	Benjamin Slaughter	do	do	100 00		
643584	William J. Grimes	do	do	75 00		
643588	Laban T. Rogers	do	do	100 00		
643589	John D. Oug	do	do	100 00		
643593	Thomas Caples	do	do	75 00		
643594	John Woodruff	do	do	100 00		
643595	Sydney Smith	do	do	100 00		
643597	Charles W. Teall	do	do	100 00		
643598	Robert Cushing	do	do	100 00		
643599	William C. Mitchell	do	do	100 00		
643600	Richard Dobbins	do	do	100 00		
643607	John Cooney	do	do	100 00		
643608	George W. Waters	do	do	75 00		
643611	George Burks	do	do	10 00		
643612	George Mason	do	do	90 00		
643613	do	do	do	10 00		
643614	Peter Chastein	do	do	88 50		
643615	do	do	do	11 50		
643616	George Lewis	do	do	90 00		
643617	do	do	do	10 00		
643618	John Bristow	do	do	89 50		
643619	do	do	do	10 50		
643620	Burgess White	do	do	88 80		
643621	do	do	do	11 20		
643643	Alfred Johnson	do	do	88 50		
643644	do	do	do	11 50		
643645	Mitchell Clark	do	do	190 00		
643646	do	do	do	10 00		
643647	Frank Murry	do	do	100 00		
643650	Wiley Center	do	do	90 00		
643651	do	do	do	10 00		
643652	Gordon Chandler	do	do	100 00		
643655	Patrick Gardner	do	do	100 00		
643656	David Warren	do	do	100 00		

643659	William Smith	do	do	100 00
643671	Thomas Howard	do	do	40 00
590104	Thomas J. Johnson	do	do	100 00
636471	Joseph Lane	do	do	33 33
642716	John A. Leib	do	do	58 54
642851	Charles L. Maire	do	do	100 00
643007	Thomas Fields	do	do	89 00
643339	Henry Hatch	do	do	340 00
643342	John C. Olinger	do	do	75 00
643344	John Roser	do	do	100 00
643345	Augustus Smith	do	do	66 67
643347	Bailey T. Baldwin	do	do	100 00
643349	John Luther	do	do	100 00
643351	Erick Erickson	do	do	100 00
643354	Jacques W. J. Noble	do	do	85 00
643355	David Smith	do	do	80 00
643383	William H. H. Hagey	do	do	100 00
643388	Frederick Greiner	do	do	100 00
643390	Henry Dunhan	do	do	100 00
643393	George Farrington	do	do	100 00
643394	Charles L. Btaxton	do	do	100 00
643395	S. G. Merrill	do	do	100 00
643398	Chester Herrington	do	do	75 00
643400	Christopher Fagan	do	do	100 00
643535	Amos Salspaugh	do	do	100 00
643574	James Coburn	do	do	300 00
643585	John Kelly	do	do	100 00
643596	Charles H. Harrington	do	do	100 00
643602	Philip Wartman	do	do	100 00
643603	Charles Clark	do	do	100 00
643605	James Gardner	do	do o	75 00
643610	Joseph Pace	do	do	100 00
643622	Robert Coleman	do	do	88 80
643623	do	do	do	11 20
643624	Sterling Westerfield	do	do	94 94
643625	Alexander Cook	do	do	61 56
643626	do	do	do	7 50
643627	Frank Holloway	do	do	88 00
643628	do	do	do	12 00
643629	William Lewis	do	do	89 00
643630	do	do	do	11 00
643631	Charles Jones	do	do	90 00
643632	do	do	do	10 00
643633	Jesse Merkins	do	do	300 00
643635	John Armstrong	do	do	90 00
643636	do	do	do	10 00
643637	Harry Belt	do	do	90 00
643638	do	do	do	10 00
643639	Henry Ball	do	do	100 00
643661	John W. Webb	do	do	90 00
643662	do	do	do	10 00
643663	Blunt Northcote	do	do	300 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal years in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
643664	William Mapp	Bounty to volunteers and their widows and legal heirs.	1871 and prior years.	$200 00		
643665	Rhoda Timbers	do	do	89 50		
643666	do	do	do	10 50		
643667	Anthony Washington	do	do	100 00		
643670	Isaac Taylor	do	do	88 50		
643731	do	do	do	11 50		
643735	Newton Bomer	do	do	300 00		
643737	Stephen Long	do	do	100 00		
643740	Andrew Yates	do	do	90 00		
643741	do	do	do	10 00		
643742	Charles Coleman	do	do	200 00		
643743	George Powell	do	do	89 00		
643744	do	do	do	11 00		
643754	Charles Waube	do	do	100 00		
643757	Henry Sample	do	do	100 00		
643760	David Crane	do	do	100 00		
643761	Edward Y. Hughes	do	do	100 00		
643762	James Mackey	do	do	33 33		
643763	George E. Bridge	do	do	100 00		
643764	William H. Buswell	do	do	75 00		
643767	David Dunmyer	do	do	100 00		
643769	William Bowes	do	do	100 00		
643791	Robert Rains	do	do	100 00		
643792	George W. Darr	do	do	100 00		
643793	Franklin Fulton	do	do	25 00		
643796	James Gould	do	do	100 00		
643797	Thomas Burke	do	do	100 00		
643799	Martin Nash	do	do	100 00		
643801	William Gascoyne	do	do	100 00		
643804	Edwin Willets	do	do	100 00		
643807	Joel P. Butterfield	do	do	100 00		
643808	Virgil M. Carne	do	do	100 00		
643810	Newton N. Barrett	do	do	100 00		
643811	Peter James	do	do	100 00		
643812	Jerome B. Lindsey	do	do	100 00		

643814	George Spees	do	do	100 00		
643818	Peter B. Lyter	do	do	100 00		
643819	William T. Coss	do	do	44 64		
643821	Charles Grant	do	do	90 00		
643822	do	do	do	10 00		
643823	William Odin	do	do	89 00		
643824	do	do	do	11 00		
643825	George Dean	do	do	300 00		
643827	Jerry Ballinger	do	do	73 75		
643828	do	do	do	8 00		
643921	William Parshall	do	do	185 50		
642499	Eugene Partridge	do	do	43 36		
643273	Isaac Johnson	do	do	33 33		
643560	Henry Turner	do	do	90 00		
643561	do	do	do	10 00		
641	William Milard	Pay of two and three years' volunteers	do	28 16	$164, 419 54	In surplus fund.
43541	John Cronnoble	do	do	41 60		
52974	Charles Strong	do	do	35 96		
97588	John S. Stevens	do	do	58 93		
102962	Joseph A. Steingardt	do	do	26 00		
105905	William M. Corwin	do	do	32 76		
133154	James Graden	do	do	43 23		
260083	Charles A. Smith	do	do	41 93		
465991	John Murtaugh	do	do	191 11		
481773	Merrick Hall	do	do	9 64		
546831	William Proctor	do	do	110 26		
558283	Peter Andt	do	do	50 16		
587416	Washington Caldwell *alias* Gentry	do	do	30 74		
634826	Henry Van Liew	do	do	63 50		
636431	Andrew J. Rice	do	do	19 06		
636863	Alexander W. Gilmore	do	do	152 00		
637325	Jacob Wirtz	do	do	356 93		
638137	W. H. Rodecker	do	do	104 83		
638774	Samuel Senecel	do	do	53 33		
638931	George B. Abbott	do	do	57 72		
638934	James M. Bailey	do	do	93 53		
638935	John Gardner	do	do	16 16		
639281	Chauncey Warden	do	do	220 89		
639287	John M. Edwards	do	do	30 03		
639307	Charles H. Gould	do	do	3 73		
639341	John Folk	do	do	20 86		
639414	Clarence E. Haney	do	do	441 53		
639493	Nathan Cole	do	do	526 79		
639501	William H. Derby	do	do	48 67		
639505	Richard Boatwright	do	do	74 10		
639506	William Sheppard	do	do	53 20		
639573	John Gifford	do	do	48 10		
639577	C. F. Mitchell	do	do	231 10		
639578	John Meads	do	do	90 68		
639580	William A. Lennox	do	do	152 00		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
639583	Joseph H. Syphard	Pay of two and three years' volunteers	1871 and prior years.	$27 66		
639587	William Waterhouse	do	do	187 50		
639593	F. W. Knobelsdorff	do	do	212 25		
639596	Frederick, or Gottfried Rufer	do	do	12 16		
639597	George H. Crawford	do	do	21 71		
639600	Kenneth McDonald	do	do	101 29		
639606	Marshall Lawrence	do	do	19 60		
639609	John Lyons	do	do	39 86		
639610	Anson Latten	do	do	23 03		
639611	James McMannory	do	do	176 67		
639612	Walter C. Elkin	do	do	214 96		
639613	William C. Wilhelm	do	do	798 32		
639614	Hiram Murphy	do	do	45 49		
639626	William Miller	do	do	9 98		
639631	James W. Morgan	do	do	33 43		
639638	James H. Reese	do	do	688 99		
639662	Joel P. Keyes	do	do	202 60		
639667	Lemuel J. Winslow	do	do	185 54		
639677	Warner Jackson	do	do	30 00		
639682	George F. Lods	do	do	42 58		
639683	John A. Hatch	do	do	131 80		
639684	Charles A. Briggs	do	do	132 20		
639685	Romulus A. Moss	do	do	141 80		
639686	John P. Worthing	do	do	33 63		
639688	Samuel P. Pearsons	do	do	356 36		
639689	Henry C. Nichols	do	do	290 51		
639690	Abial G. Chamberlin	do	do	544 49		
639723	David McDonald	do	do	92 84		
639725	Nathaniel, or Nathan Fisher	do	do	42 90		
639735	Harvey J. Hays	do	do	90 78		
639736	William B. Hollas, or Hollis	do	do	17 63		
639738	George A. Parker	do	do	88 40		
639748	Oliver B. Doyle	do	do	9 12		
639750	Garland King	do	do	34 66		
639779	Edward Lavergene	do	do	109 53		

639780	....do	....do	....do	7 75
639783	Alpha A. Carr	....do	....do	84 06
639795	Josephus Godbey	....do	....do	71 51
639800	George Hoffner	....do	....do	64 28
639801	Waddey Johnson	....do	....do	87 59
639802	Elmer Golden	....do	....do	88 67
639803	Andrew Johnson	....do	....do	61 14
639807	William Payton	....do	....do	11 05
639811	James Waymire	....do	....do	38 40
639812	George W. Cates	....do	....do	125 50
639817	George Latham	....do	....do	51 92
639819	Dennis Anderson	....do	....do	108 90
639820	Thomas J. Dodd	....do	....do	53 46
639822	Isaac F. Burkatt	....do	....do	4 40
639823	William J. Kilmore	....do	....do	343 84
639827	Frank Wipperman	....do	....do	47 44
639829	Ismael Lunsford	....do	....do	33 34
639830	Thomas E. Davidson	....do	....do	36 80
639833	Joseph Schneider	....do	....do	66 73
639839	Harvey J. Burns	....do	....do	893 37
639842	Walter Curtis	....do	....do	202 49
639844	Isaac Cordon	....do	....do	69 40
639845	Jacob Gohan	....do	....do	59 32
639846	William Tarner	....do	....do	25 71
639852	Frank A. Donaldson	....do	....do	163 95
639861	Jeremiah S. Alexander	....do	....do	512 03
639868	Benjamin S. Pindar	....do	....do	726 66
639870	Edward Myers	....do	....do	52 00
639873	Jacob C. Limbury	....do	....do	67 60
639874	James B. Lucas	....do	....do	330 22
639876	Charles R. Miller	....do	....do	86 54
639880	Theodore J. Vanneman	....do	....do	34 40
639888	Andrew J. Byers	....do	....do	69 20
639891	Franklin B. Swan	....do	....do	26 63
639905	Lloyd Rollins	....do	....do	342 29
639912	John Watkins	....do	....do	112 69
639915	Commodore Perry	....do	....do	11 83
639916	....do	....do	....do	7 00
639922	Sam. Mumford	....do	....do	12 00
639927	Sandy Slate, or Slade	....do	....do	72 46
639928	Richard Lawrence	....do	....do	52 50
639929	....do	....do	....do	7 50
639930	Lawson Poteete	....do	....do	41 46
639936	Joseph W. Fairless	....do	....do	60 50
639942	James B. Smith	....do	....do	196 34
639944	Richard Robinson	....do	....do	25 22
639950	Orville A. Ross	....do	....do	26 20
639959	Stephen Wilson	....do	....do	4 71
639973	Frank P. Peace	....do	....do	70 20
639974	William Mattingly	....do	....do	56 33
639978	Wilson C. Jackson	....do	....do	334 02
639981	Rice D. Bowman	....do	....do	10 13

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
639982	John Bohn	Pay of two and three years' volunteers	1871 and prior years.	$43 78		
639984	John B. Chesser	do	do	37 20		
639986	Joseph P. Shewmake	do	do	24 40		
639989	George Huddleson	do	do	78 00		
639993	Thomas Fitzpatrick	do	do	28 47		
639995	Timothy O. Hall	do	do	25 13		
639997	Edmund W. Holton	do	do	65 86		
640005	Christian Rosenstiel	do	do	107 60		
640006	William V. Light	do	do	18 13		
640008	Smith Walker	do	do	110 37		
640009	William Dwight, jr	do	do	156 34		
640010	David A. Signor	do	do	199 50		
640011	George F. Hecker	do	do	133 57		
640012	Eliab N. Osborn	do	do	8 02		
640015	William H. Philip	do	do	680 70		
640018	James L. Schwerdfeger	do	do	52 73		
640021	Peter McGrath	do	do	40 69		
640024	William Ralston	do	do	17 80		
640031	Jefferson Dillaway	do	do	26 44		
640032	do	do	do	5 00		
640036	Frank Dixon	do	do	67 31		
640040	Jack Carson	do	do	8 27		
640041	do	do	do	10 50		
640046	Henry Boman	do	do	17 33		
640047	do	do	do	10 00		
640048	John Rollins	do	do	82 20		
640051	Curry Larue	do	do	1 01		
640052	do	do	do	11 00		
640056	James Lee	do	do	156 53		
640059	Henry Gregg	do	do	81 47		
640060	do	do	do	13 00		
640061	William Malsbury	do	do	27 30		
640066	Thomas Devin	do	do	30 54		
640074	William Keck	do	do	144 19		
640077	James M. Wilson	do	do	26 00		

640085	Moses H. Smith	....do	....do	142 28
640086	George W. Taylor	....do	....do	135 41
640091	Clarence Burnside	....do	....do	3 75
640094	Toby Adams	....do	....do	25 99
640099	William H. Nelson	....do	....do	53 25
640102	Boston Clark	....do	....do	20 36
640107	Shelby Phelps	....do	....do	30 97
640108	....do	....do	....do	10 00
640111	Larkin Wilson	....do	....do	165 89
640113	Daniel Pope	....do	....do	14 40
640114	....do	....do	....do	10 00
640118	Joshua Bryant	....do	....do	12 93
640119	....do	....do	....do	10 00
640120	George Alexander	....do	....do	3 20
640122	John A. Metzger	....do	....do	73 68
640126	Samuel Allison	....do	....do	87 59
640135	Alvin Delong	....do	....do	105 20
640136	Hugh McCormick	....do	....do	93 53
640137	Richard H. Collier	....do	....do	28 74
640140	Melvin Beverly	....do	....do	94 47
640141	Marcus A. Hart	....do	....do	169 22
640142	Charles S. Emerson	....do	....do	114 12
640143	Adalbert Neuman	....do	....do	89 32
640144	Armenius S. Daniels	....do	....do	6 39
640146	Jesse Campbell	....do	....do	9 53
640175	Pomp Ray	....do	....do	49 83
640180	John W. Holloway	....do	....do	215 02
640181	....do	....do	....do	10 00
640184	William Villery	....do	....do	34 76
640197	Stephen Bowder	....do	....do	23 13
640203	Romulus Bonner	....do	....do	2 36
640204	....do	....do	....do	10 00
640205	Andrew Holland	....do	....do	4 22
640206	....do	....do	....do	9 00
640207	Major Freeland	....do	....do	145 23
640208	....do	....do	....do	13 00
640213	Alfred McMurry	....do	....do	56 14
640226	William Ross	....do	....do	102 18
640229	Abraham Jones	....do	....do	72 57
640246	Edward A. Belger	....do	....do	17 00
640274	James Cates	....do	....do	153 01
640275	....do	....do	....do	12 00
640284	Samuel Ranty	....do	....do	170 54
640285	John Cook	....do	....do	16 65
640294	Jacob Harris	....do	....do	177 84
640299	Isaac De Lane, *alias* Lane	....do	....do	15 16
640302	David Jenkins	....do	....do	45 55
640303	....do	....do	....do	9 00
640308	James Smith	....do	....do	10 83
640311	Daniel Carter	....do	....do	10 23
640312	....do	....do	....do	11 00
640313	Gabriel Riddle	....do	....do	87 76

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
640314	Henry Rogers	Pay of two and three years' volunteers	1871 and prior years.	$10 00		
640317	Gibbon Stewart	do	do	30 67		
640338	William Moss *alias* Morse	do	do	29 46		
640340	James Ray	do	do	63 55		
640341	George P. Stein	do	do	208 95		
640343	Samuel Allison	do	do	4 15		
640345	John J. Williams	do	do	28 03		
640346	Mathew *alias* Matthais Schmidt	do	do	39		
640347	William A. Walker	do	do	24 46		
640348	John Zentner	do	do	14 00		
640363	Dades Childs	do	do	15 60		
640364	do	do	do	5 00		
640369	Frank Edmunson	do	do	396 18		
640375	John Huston	do	do	29 56		
640377	Henry Jones	do	do	23 61		
640379	Orange Johnson	do	do	1 45		
640380	George Kimball	do	do	42 46		
640381	do	do	do	10 00		
640388	George W. King	do	do	170 11		
640389	do	do	do	11 00		
640390	Charles Meriweather	do	do	50 17		
640391	John Fillmore	do	do	2 08		
640392	do	do	do	10 50		
640393	Jordan Jackson	do	do	27 14		
640400	Wilson Cockerill	do	do	41 16		
640401	do	do	do	10 00		
640411	Randal Mercer	do	do	79 03		
640414	Dennis Mercer	do	do	47 69		
640417	Peter Johnson	do	do	39 43		
640424	Edward F. Potter	do	do	13 74		
640429	Charles T. Countermine	do	do	44 63		
640431	Henry M. Pigman	do	do	40 97		
640432	David Brott	do	do	3 73		
640435	John L. Roose	do	do	22 60		
640436	Martin Lally	do	do	5 74		

640442	Calvin H. Jones	do	do	26 43
640453	Edmund Martin	do	do	72 91
640454	do	do	do	10 00
640458	Isam Henderson	do	do	60 66
640463	Alfred Beatty	do	do	55 56
640464	do	do	do	12 50
640469	John Hamilton	do	do	79 84
640472	John Nunn	do	do	21 21
640473	Carr Trout	do	do	71 27
640474	do	do	do	10 00
640480	Henry Rogers	do	do	62 04
640481	Charles Meriweather	do	do	11 50
640487	Robert Martin	do	do	68 73
640490	George Martin	do	do	129 57
640494	Vincent Wallace	do	do	40
640495	do	do	do	10 00
640500	Shelby Bell	do	do	4 63
640508	Charles Harris	do	do	33 33
640510	George Ellis	do	do	95 20
640520	John W. Moore	do	do	216 33
640553	George Newman	do	do	26 00
640554	George Ackerson	do	do	90 57
640562	Harry Smith	do	do	15 71
640563	do	do	do	10 50
640564	Samuel Whitsett	do	do	16 96
640565	do	do	do	10 00
640570	Daniel Arnold	do	do	145 15
640572	Albert Hedges	do	do	15 62
640573	Green McLewee	do	do	16 43
640574	do	do	do	10 00
640579	George Morton	do	do	8 89
640580	do	do	do	10 00
640602	Nelson Lackey	do	do	80 84
640606	John J. Wheeler	do	do	96 90
640613	Benjamin H. Shepard	do	do	6 50
640617	Lindley T. Mayo	do	do	69 86
640618	William W. Waggle	do	do	16 00
640619	Joseph Marbet	do	do	32 00
640621	Peter Symond or Simon	do	do	20 43
640626	Henderson Williams	do	do	35 18
640627	do	do	do	10 00
640628	Alexander Harris	do	do	21 86
640629	do	do	do	10 00
640637	Henry Watts	do	do	14 06
640642	Isaac Scott	do	do	3 40
640643	do	do	do	10 00
640662	Emery L. White	do	do	47 99
640665	Simon or Simeon Babcock	do	do	8 24
640667	Hiram Crain	do	do	5 35
640705	S. B. Bowen	do	do	35 00
640723	Adam Benninger	do	do	22 96
640725	John Gibbons	do	do	17 59

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
640733	George W. Smith	Pay of two and three years' volunteers	1871 and prior years.	$1 46		
640753	Thomas J. Paynter	do	do	48 40		
640760	John W. Post	do	do	44 95		
640764	Fidel Shadinger or Scherzinger	do	do	44 35		
64 775	John G. Harrington	do	do	44 83		
640783	R. Murray House	do	do	6 15		
640802	John J. Lee	do	do	66 30		
640822	Primus E. Roberts	do	do	3 00		
640825	John Govan	do	do	32 06		
640828	Nelson Johnson	do	do	14 24		
640829	do	do	do	10 00		
640838	Henry Watson	do	do	78 23		
640846	Edward Baylor	do	do	52 76		
640847	do	do	do	10 00		
640848	Martin Hinkle	do	do	40 11		
640849	Leonard Scott	do	do	22 96		
640854	Henry Foster	do	do	10 70		
640855	do	do	do	11 50		
640857	Plato Watkins	do	do	99 64		
640858	Zachariah Burton	do	do	22 10		
640859	William Proctor	do	do	10 00		
640860	Albert Jones	do	do	25 46		
640861	Oren Betts	do	do	3 59		
640862	do	do	do	12 50		
640863	George C. Smith	do	do	13 60		
640866	George E. Smith	do	do	80 12		
640877	Benjamin Wilson	do	do	67 62		
640891	John Q. Washburn	do	do	65 52		
640893	Jeremiah Stalter	do	do	50 26		
640894	Joseph Barrett	do	do	4 76		
640901	Lorenzo E. Redlon	do	do	17 56		
640902	Michael Miller	do	do	7 19		
640904	Charles D. Moody	do	do	1 47		
640905	George M. Koehler	do	do	46 18		

640906	Henry C. Allison	do	do	11 10
640907	Thomas R. Rawson	do	do	285 00
640910	Don Elias Downing	do	do	42 19
640934	Alpheus Lambert	do	do	28 16
640937	Edmond or Edwin J. Perkins	do	do	45 06
640962	William Seager	do	do	16 50
640970	Robert McFarland	do	do	8 29
640979	John R. Bowen	do	do	82 23
640981	Thomas Reiner	do	do	35 78
641001	Benton Means	do	do	20 33
641002	do	do	do	10 00
641005	Henry Warner	do	do	41 33
641006	do	do	do	10 00
641007	John Jarrett	do	do	20
641008	do	do	do	5 50
641009	Mark Smith	do	do	48 30
641012	Alexander Banks	do	do	41 80
641029	Steuman Hennison	do	do	88 20
641030	do	do	do	10 00
641031	George W. Phifer	do	do	199 31
641033	Thomas J. Choate	do	do	377 11
641035	Milton Ladd	do	do	395 27
641037	Kneeland F. Huckaby	do	do	327 86
641039	Erastus Foster	do	do	426 04
641045	Andrew Head	do	do	19 50
641048	William D. Trescott	do	do	153 90
641050	Michael Crone	do	do	24 90
641052	James E. Staup or Staub	do	do	19 08
641072	Abijah Wilcox	do	do	42 00
641077	George S. Bucher	do	do	24 48
641079	John Bucher	do	do	50 26
641080	Emanuel Hade	do	do	548 66
641092	James Williams	do	do	30 20
641103	Harry Butts	do	do	12 00
641109	John Turner	do	do	188 33
641110	Charles Vincent	do	do	23 66
641111	do	do	do	5 00
641114	Wesley Alexander	do	do	53 33
641115	Alfred Jones	do	do	72 31
641118	Alfred Payne	do	do	16 33
641141	George B. Cooley	do	do	78 26
641142	William M. Schrock	do	do	287 37
641143	William Edgar	do	do	37 43
641145	Joseph F. Skinner	do	do	44 23
641147	Andrew J. Montanye	do	do	170 40
641148	Jefferson Newcomb	do	do	111 16
641152	Benjamin J. Wiley	do	do	12 35
641153	Samuel T. Riggs	do	do	146 38
641154	Virus W. Dorwin	do	do	117 72
641157	Robert Watson	do	do	3 00
641160	William Dooley	do	do	59 13
641163	Isaac F. Tuttle or Tuthill	do	do	73 12

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
641164	William J. Norrod	Pay of two and three years' volunteers	1871 and prior years.	$59 87		
641167	Philip Hermann	do	do	216 48		
641169	James T. Lunsford	do	do	25 26		
641170	James P. Gillmore	do	do	109 20		
641192	Abraham Cherry	do	do	90 57		
641195	James Dawson	do	do	103 84		
641196	do	do	do	10 00		
641197	Edward Steele	do	do	42 30		
641198	do	do	do	10 00		
641201	Washington Spencer	do	do	47 81		
641202	do	do	do	11 50		
641203	Spencer Graves	do	do	65 91		
641204	do	do	do	10 50		
641205	James Talbott	do	do	86 60		
641206	do	do	do	10 00		
641212	John Morton	do	do	11 20		
641213	do	do	do	5 00		
641215	Isaac Moseley	do	do	7 96		
641217	Barrick Carraway	do	do	7 98		
641219	Noah Thurston	do	do	5 45		
641223	Edward B. Wilson	do	do	27 56		
641224	do	do	do	10 00		
641229	Antimore Sallsbury	do	do	31 10		
641236	James Kimbrough	do	do	20 80		
641239	Ackerman or Aiken Dawson	do	do	94 76		
641240	do	do	do	11 50		
641241	Rueben S. Mason	do	do	177 47		
641242	Henry Thompson	do	do	63 21		
641243	do	do	do	7 50		
641252	George Gifford	do	do	101 53		
641254	Milo Overfield	do	do	29 33		
641261	Michael Florenge	do	do	36 40		
641262	Addison C. Shaw	do	do	108 53		
641263	Benjamin F. Frost	do	do	92 95		
641264	Joseph P. Mason	do	do	21 68		

641268	George M. Carr	....do	....do	49 20
641270	Thomas G. Stull	....do	....do	146 45
641271	Alonzo Rowlandson or Rollinson	....do	....do	48 75
641272	John Lewis	....do	....do	320 14
641273	Edwin J. Loomis	....do	....do	6 04
641280	Adam Jones	....do	....do	10 11
641283	Lewis Schroeder	....do	....do	14 27
641284	John White	....do	....do	16 63
641285	....do	....do	....do	10 00
641290	William A. Hill	....do	....do	400 26
641333	John Grandison, jr	....do	....do	165 03
641336	Robins Amos	....do	....do	91 41
641339	Howard Bashford	....do	....do	41 40
641343	Bella Wilkison	....do	....do	66 00
641348	William Payne	....do	....do	40 50
641349	....do	....do	....do	11 50
641350	Edward Marshal	....do	....do	49 80
641352	Henry Sanders	....do	....do	88 77
641354	William Brocks	....do	....do	44 72
641356	Samuel Harris	....do	....do	50 56
641362	Samuel Mason	....do	....do	119 99
641366	Fate Arnold	....do	....do	18 00
641367	Daniel Linneo	....do	....do	61 30
641373	William Waddel	....do	....do	31 61
641376	James H. Clemens	....do	....do	8 80
641377	Horace L. Weeks	....do	....do	24 55
641378	David Conn	....do	....do	21 23
641379	Andrew J. Carter	....do	....do	32 93
641380	Cornelius Murphy	....do	....do	8 91
641382	Albert Taylor	....do	....do	18 70
641384	Shubel Hutchins	....do	....do	43 65
641403	John L. Stratton	....do	....do	125 21
641409	Joel N. Cummins	....do	....do	216 43
641410	William A. Branner	....do	....do	13 07
641425	Alexander Guitar	....do	....do	117 86
641441	General Fate or Fayette	....do	....do	23 35
641442	....do	....do	....do	12 00
641447	Epaulett Dufriend	....do	....do	196 50
641450	Peter S. Trephegan	....do	....do	339 97
641452	Frederick Hansen	....do	....do	37 07
641455	James Burke	....do	....do	122 21
641458	Marvin Welcker	....do	....do	23 60
641459	Edwin H. Landback	....do	....do	27 61
641462	Charles Peterson	....do	....do	10 40
641464	Ernst Dipman	....do	....do	342 36
641467	Benjamin J. Beach	....do	....do	30 47
641471	Edward Marshall	....do	....do	7 50
641484	Kinchen Hide No. 1	....do	....do	3 56
641486	Lemuel White	....do	....do	41 06
641489	George Powell	....do	....do	206 80
641490	Jacob Moody	....do	....do	63 66
641493	William White	....do	....do	4 13

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
641500	Cyrus Donel *alias* McGee	Pay of two and three years' volunteers	1871 and prior years.	$12 30		
641523	Nicholas Clanch	do	do	34 66		
641526	Ben. S. Dixon	do	do	73 98		
641527	Gilbert Hicks	do	do	55 83		
641528	do	do	do	11 50		
641530	Alexander Robinson	do	do	88 40		
641541	George Demerson	do	do	16 00		
641542	Simon Scippio	do	do	12 00		
641545	Alexander John (Jones)	do	do	83 39		
641548	Massella Cary	do	do	65 00		
641582	Isaac H. Miller	do	do	4 00		
641593	James W. Welsh	do	do	33 90		
641594	Zachary Fertig	do	do	14 99		
641597	Joseph P. Miller	do	do	23 43		
641598	Ariel W. Burrows	do	do	21 45		
641600	Charles W. Wood	do	do	7 15		
641603	Christopher Tiner	do	do	42 05		
641634	Thomas Allen	do	do	12 09		
641640	George Ives	do	do	8 08		
641641	David Breese	do	do	43 73		
641661	Cyrus Donel *alias* McGee	do	do	11 00		
641664	Isaac Dent	do	do	29 30		
641676	Henry Clark	do	do	35 63		
641683	Ewell Conway	do	do	13 52		
641695	James Richards	do	do	27 73		
641697	William V. Nave	do	do	26 85		
641709	Barent M. Van Voast	do	do	201 88		
641717	Charles Crouse	do	do	3 15		
641719	John J. Hill	do	do	84 00		
641763	Solomon Reynolds	do	do	90 47		
641770	Parker Huff	do	do	89 05		
641771	do	do	do	10 00		
641780	Green Troop	do	do	39 60		
641781	do	do	do	7 00		
641792	Joseph S. Graham	do	do	14 78		

641793	James L. Graham	....do	....do	7 15
641794	William H. Gobles	....do	....do	7 84
641795	Edson Squires	....do	....do	7 42
641799	Richard M. Baker	....do	....do	48 07
641808	William Johnson	....do	....do	50 09
641813	Henry V. McGlaughlin	....do	....do	349 60
641819	Benjamin F. Potter	....do	....do	3 50
641823	Allen Newhouse	....do	....do	1 30
641831	Alfred Thornton	....do	....do	20 83
641832	....do	....do	....do	5 50
641836	George McNeil	....do	....do	84 63
641839	Joseph Shipley	....do	....do	3 57
641843	John Prudhomme or Prudein	....do	....do	65 59
641846	William Lyons	....do	....do	31 13
641847	....do	....do	....do	11 00
641848	Charles Black	....do	....do	91 35
641860	Charles Wilkison	....do	....do	94 58
641866	William D. Ritter	....do	....do	65 15
641871	Mark Brownell	....do	....do	30 31
641872	William W. Bagley	....do	....do	22 43
641875	John Headland	....do	....do	203 98
641877	W. H. H. Goolsby	....do	....do	20 36
641878	Edward Gray	....do	....do	55 03
641883	Samuel Brown	....do	....do	44 48
641885	Andrew Rogers	....do	....do	26 00
641886	Francis Rock	....do	....do	20 80
641889	John McPherson	....do	....do	30 03
641892	Enoch K. Kent	....do	....do	37 16
641897	Elisha S. Records	....do	....do	48 35
641899	Jacob Shelburn	....do	....do	182 34
641901	John Montis	....do	....do	61 61
641904	Linsey Cremeans	....do	....do	20 83
641906	Richard A. Tucker	....do	....do	41 71
641911	Madison Doss	....do	....do	173 83
641917	John C. Stahel	....do	....do	301 65
641925	George Weyer or George W. Ware	....do	....do	21 66
641956	Franklin Dunnall	....do	....do	11 80
641957	....do	....do	....do	11 00
641962	Joseph Derall	....do	....do	35 70
641968	George Lovelace	....do	....do	76 70
641969	Alfred Clark	....do	....do	6 30
641976	Henry McClannahan	....do	....do	130 89
641979	Reuben Lee	....do	....do	17 76
641986	Nehemiah Havalock or Havalon	....do	....do	76 30
641987	....do	....do	....do	7 50
641988	Goodwin McLin	....do	....do	6 20
641996	Ellis Nelson	....do	....do	92 96
642002	Llewellyn F. Haskell	....do	....do	270 75
642003	Robert Munday	....do	....do	72 00
642007	Stephen Little	....do	....do	48 75
642026	Gilbert K. Perry	....do	....do	33 75
642037	William Witt	....do	....do	84 97

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
642038	Frank Raffel	Pay of two and three years' volunteers	1871 and prior years.	$28 91		
642039	Heinrich Zillich or Johann Heinrich Zeulch.	do	do	17 31		
642042	Napoleon D. Brown	do	do	13 20		
642044	Peter Bischoff	do	do	212 07		
642045	John H. Thompson	do	do	98 45		
642048	John Turner	do	do	81 03		
642049	Thomas H. B. McDaniel or Thomas McDaniel.	do	do	34 73		
642054	John Looker	do	do	65 94		
642055	Meredith B. Meador	do	do	81 03		
642061	Frank Mansfield	do	do	31 20		
642068	Willis Ellis	do	do	31 20		
642069	John Patterson	do	do	7 70		
642070	do	do	do	11 50		
642073	Brack Miller	do	do	29 72		
642074	do	do	do	6 50		
642075	Perry E. Cook	do	do	43 71		
642076	do	do	do	8 50		
642083	Henry Breckenridge	do	do	7 03		
642084	do	do	do	10 00		
642085	James Taylor	do	do	30 70		
642086	do	do	do	12 25		
642091	Mathew Gillgan	do	do	31 63		
642093	Daniel T. or Daniel F. Eldridge	do	do	76 52		
642101	David Endy	do	do	112 96		
642124	George W. Murdock	do	do	110 59		
642126	David M. Coonrod	do	do	57 75		
642128	George W. Wells	do	do	7 06		
642129	Henry S. Coyle	do	do	9 00		
642145	Jacob N. Knapp	do	do	46 56		
642147	John Warner	do	do	43 76		
642151	Ogden Hoffman	do	do	51 00		
642153	Solomon Click	do	do	55 46		
642154	Charles L. Speight	do	do	152 43		

642158	William Wing	do	do	42 03
642173	Peter Baker	do	do	19 78
642180	John Daggett	do	do	64 80
642182	Ericus Kniese	do	do	16 03
642186	John O. Edwards	do	do	222 01
642188	Raimund Michael	do	do	6 00
642203	Alexander Smith	do	do	93 77
642211	Aaron Long	do	do	59 80
642217	Richard Wright	do	do	109 16
642218	do	do	do	11 00
642219	Dennis Johnson	do	do	3 03
642222	Robert Gibson	do	do	21 66
642229	Robert Turpin	do	do	5 00
642232	Gottlieb Link	do	do	100 24
642236	Samuel C. Thompson	do	do	715 40
642241	Jerome Maltby	do	do	37 85
642244	Scribner Cates	do	do	88 60
642245	Thomas S. Hathaway	do	do	20 89
642246	Lewis A. Fry	do	do	5 56
642265	Iredell R. Allgood	do	do	42 91
642277	Frank or Francis Moore	do	do	76 20
642278	do	do	do	13 00
642284	Rolla Cole	do	do	42 00
642294	Henry Jones	do	do	85 40
642297	Henry Clay	do	do	39 50
642298	Jefferson Grigsby	do	do	2 51
642301	Joseph Brown	do	do	12 00
642302	Jesse Jones	do	do	15 44
642305	Jacob Steiner or Steinharter	do	do	45 09
642307	Gotthard Klingg	do	do	105 77
646308	James Dundin	do	do	293 32
642310	David H. Springer	do	do	182 30
642311	Adam Faust	do	do	13 20
642312	Martin V. Lewis	do	do	167 67
642315	James C. McMann or James McMahan	do	do	73 73
642316	Robert B. Reynolds	do	do	13 20
642320	Joseph Ray	do	do	68 38
642338	George Geomer or Glomer	do	do	5 43
642346	Charles Desho	do	do	7 93
642349	Frank E. Miller	do	do	271 70
642352	Edward Moberly	do	do	82 72
642359	Solomon Peoples	do	do	16 90
642360	do	do	do	11 50
642361	Jefferson Lee	do	do	64 68
642371	Solon M. Johnson	do	do	119 70
642374	Eli J. Wilcox	do	do	106 00
642375	John F. Bookwalter	do	do	36 59
642376	Joseph Bondie	do	do	119 30
642378	James Leviness	do	do	9 29
642379	Charles Lafferty	do	do	35 50
642380	John Thompson	do	do	149 44
642382	Stephen R. Newman	do	do	67 43

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
642383	Melvin H. Beemis	Pay of two and three years' volunteers	1871 and prior years.	$481 35		
642390	Samuel B. Shadle	do	do	9 77		
642403	William B. Taylor	do	do	30 56		
642404	Eli Sharp	do	do	19 58		
642416	Luman Smith	do	do	164 23		
642418	Eli Hartley	do	do	13 00		
642421	Peter Wilson	do	do	54 27		
642426	George M. Evans	do	do	4 95		
642428	Edward Simpson	do	do	222 47		
642431	Robert Ingram	do	do	12 56		
642432	do	do	do	13 00		
642433	John Fitzpatrick	do	do	4 44		
642434	do	do	do	10 00		
642439	William Hancock	do	do	128 26		
642442	Jacob Miller	do	do	84 27		
642445	Henry Butler	do	do	60 72		
642446	do	do	do	7 50		
642449	William Robinson	do	do	33 53		
642450	do	do	do	11 00		
642451	Benjamin Honeycutt	do	do	57 12		
642452	do	do	do	10 00		
642253	James Brown	do	do	18 79		
642458	James Lockhard	do	do	187 41		
642474	John A. Hoff	do	do	17 15		
642478	Daniel Butler	do	do	107 90		
642495	John Taylor	do	do	19 39		
642496	do	do	do	10 50		
642497	John Peters	do	do	67 48		
642498	do	do	do	10 00		
642501	William H. Curtis	do	do	24 40		
642504	Charles Anderson	do	do	50 33		
642505	do	do	do	11 00		
642510	Lewis Page	do	do	98 63		
642523	Levi F. Whiting	do	do	6 40		
642531	John P. Cole	do	do	30 56		

642538	William Warner	....do	....do	1,243 67
642562	Charles Fox	....do	....do	27 95
642563	....do	....do	....do	5 75
642564	Armistead Blakeley, *alias* Taylor	....do	....do	5 23
642565	....do	....do	....do	6 50
642570	Thomas White	....do	....do	29 38
642607	John E. Mussleman	....do	....do	14 00
642621	Thomas White	....do	....do	5 50
642622	Robert Waller	....do	....do	35 64
642623	....do	....do	....do	5 50
642624	Thomas Goodwin	....do	....do	65 02
642631	John E. Harkness	....do	....do	74 88
642633	Philip Adler	....do	....do	57 47
642651	Christian Meid	....do	....do	75 60
642661	Clayton Reeves	....do	....do	45 98
642663	George Henderson	....do	....do	32 50
642670	Reuben Johnson	....do	....do	29 68
642673	Frank Penrose	....do	....do	26 54
642676	Levi Watson	....do	....do	41 17
642679	King Anden	....do	....do	19 60
642680	....do	....do	....do	10 00
642681	Preston Woods	....do	....do	215 07
642682	....do	....do	....do	10 00
642683	John Henry	....do	....do	24 43
642685	Edward Marshall	....do	....do	39 46
642688	Joseph Thomas	....do	....do	21 33
642689	....do	....do	....do	10 00
642690	Lewis Fortune	....do	....do	15 60
642693	Henry Griffeth	....do	....do	35 10
642695	John McCarrick	....do	....do	5 07
642697	Thomas Holland	....do	....do	28 96
642699	Richard Lloyd	....do	....do	171 63
642702	James H. Jones	....do	....do	15 60
642704	Charles G. Paris	....do	....do	100 83
642708	Jonathan N. McKinney	....do	....do	29 72
642709	Hans Peterson	....do	....do	19 06
642710	Aaron Vandike	....do	....do	62 83
642712	Ebenezer Westwood	....do	....do	156 26
642713	Herman Lamphere	....do	....do	41 36
642714	John M. Hinderlider	....do	....do	86 78
642717	Alexander McMurtrie	....do	....do	215 57
642719	Joseph Wood	....do	....do	70 00
642731	James Jones	....do	....do	26 76
642742	William Woods	....do	....do	234 47
642751	James Keenan	....do	....do	37 05
642759	Constantine W. E. Lytle	....do	....do	261 59
642764	Philip A. Howe	....do	....do	6 00
642766	Frederick Jones	....do	....do	60 60
642767	George G. Colby	....do	....do	186 16
642775	Valley Crommell	....do	....do	60 53
642776	George Lowell, *alias* Flemming	....do	....do	245 12
642781	Charles Weaver	....do	....do	55 38

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
642782	Charles Weaver	Pay of two and three years' volunteers	1871 and prior years.	$7 50		
642785	Nelson Matthews	do	do	4 35		
642788	Leroy Erwin or Irvin	do	do	70 85		
642793	Henry Green	do	do	108 22		
642798	George Bryant	do	do	16 20		
642829	Patrick H. Croley	do	do	42 53		
642831	John C. Wiley	do	do	46 08		
642846	Blackwell M. Lee	do	do	44 21		
642854	Andrew J. Chovin	do	do	58 93		
642856	Albert R. Andress	do	do	39 27		
642857	Alexander Du Peel	do	do	121 93		
642859	John Simpson	do	do	31 97		
642860	John M. Widby, *alias* John H. Moore	do	do	298 96		
642861	Newell D. Cady	do	do	32 17		
642888	James Lyons	do	do	5 18		
642892	David McClelland	do	do	72 40		
642908	John Thompson	do	do	10 00		
642909	Lankford Hylton	do	do	215 05		
642917	James F. Putnam	do	do	16 46		
642919	Abram Horning	do	do	48 53		
642921	Thomas T. Crawford	do	do	20 35		
642924	James Green	do	do	63 12		
642928	John Zimmerman	do	do	23 10		
642929	Jacob Lillich	do	do	66 98		
642942	William Moore	do	do	38 40		
642945	Samuel C. Parker	do	do	82 86		
642957	Peter W. Drew	do	do	46 80		
642989	James C. Strong	do	do	40 31		
642990	do	do	do	11 00		
642997	Lewis Richards	do	do	8 66		
643000	John Wesley	do	do	11 26		
643003	Thomas Benton	do	do	23 95		
643011	John Fitzgerald	do	do	14 95		
643019	Patrick Liddy	do	do	45 11		
643027	Cornelius McCarthy	do	do	11 36		

643030	Moses Strawn	do	do	50 60
643032	John Crozier	do	do	16 06
643034	James M. Witherspoon	do	do	39 85
643035	Elijah Winters	do	do	67 33
643050	Charles T. Clayton	do	do	30 33
643056	John O. Loughlin	do	do	16 47
643063	Solomon P. Smith	do	do	401 77
643064	Charles C. Turner	do	do	29 90
643068	Lycurgus B. Guinn	do	do	29 90
643073	Andrew Smith	do	do	34 45
643075	James Rambaugh	do	do	247 04
643076	do	do	do	10 00
643077	Dick Hinkston	do	do	4 40
643078	do	do	do	10 00
643081	Albert G. Cooper	do	do	23 10
643083	John R. Johnson	do	do	22 13
643085	Peter J. Johnson	do	do	70 26
643087	Charles W. Wheeler	do	do	4 95
643100	Albert Kuntz	do	do	65 00
643101	Abram M. Van Amburgh	do	do	4 02
643103	Thomas Ocker	do	do	164 45
643116	James King	do	do	141 90
643121	Green Buckner	do	do	7 69
643123	James Scott	do	do	8 60
643125	Bruce Russell, *alias* Chesmet	do	do	91
643126	Alfred Reynolds	do	do	33 36
643131	Barney Toney	do	do	66 97
643132	do	do	do	11 00
643135	John Jones	do	do	30 14
643138	Sandy Morgan	do	do	91 06
643139	do	do	do	10 75
643141	Charles Deshay	do	do	17 93
643142	do	do	do	12 00
643143	Preston Magrew	do	do	119 73
643144	do	do	do	11 00
643145	Harry Walker	do	do	54 38
643148	St. Plisse Santiago	do	do	56 94
643149	do	do	do	8 50
643150	Henry Williams	do	do	43 39
643153	Richard Martin	do	do	22 16
643154	William R. Rains	do	do	544 52
643159	John W. Roach	do	do	123 82
643186	Winslow A. Ramsdell	do	do	2 03
643195	Almon P. Fern	do	do	72 80
643207	Josiah Brown	do	do	27 73
643223	Bernard Cohen	do	do	106 65
643232	John W. Patterson	do	do	30 83
643233	do	do	do	7 50
643239	John Brown Sitters, *alias* John Brown	do	do	118 61
643240	do	do	do	10 00
643245	James Rutledge	do	do	9 19
643246	do	do	do	10 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
643247	Robert Pinckett	Pay of two and three years' volunteers	1871 and prior years.	$98 27		
643250	Josiah Hasbrook	do	do	61 55		
643251	do	do	do	10 00		
643254	William Porter	do	do	16 57		
643257	Henry Duvaul	do	do	68 86		
643260	Henry Hughes	do	do	142 54		
643261	Henry E. Harvey	do	do	3 62		
643271	Charles Green	do	do	96 05		
643272	do	do	do	11 00		
643274	Horace L. Piper	do	do	76 25		
643279	Joshua Fosey	do	do	17 53		
643319	A. Alonzo Craw	do	do	24 93		
643328	John Zarcovich	do	do	137 58		
643330	John Murray	do	do	13 43		
643334	Daniel Cartwright	do	do	32 43		
643335	Seth N. Hedges	do	do	7 04		
643336	Ferris Forman	do	do	346 75		
643372	Richard Wright	do	do	21 23		
643376	William W. Thornton	do	do	64 30		
643377	Samuel Gibson	do	do	68 46		
643401	Henry Williams	do	do	6 50		
643402	Henry Dudley	do	do	44 58		
643403	do	do	do	11 00		
643407	Byron Foman	do	do	26 00		
643408	Joseph Crucker	do	do	97 06		
643412	William Tibbs	do	do	54 84		
643417	Richard Lee	do	do	29 86		
643420	Watson Walker	do	do	14 57		
643421	do	do	do	10 00		
643422	James Gilchrist	do	do	34 22		
643423	do	do	do	11 50		
643425	Syp. Timbuss	do	do	4 00		
643438	Mark Renfro	do	do	241 26		
643439	Harmon B. Leonard	do	do	76 96		
643445	Jesse M. or Robert M. McCan	do	do	25 13		

643464	George Grierson	do	do	60 06
643471	Thomas Powell	do	do	9 53
643472	James Newton	do	do	95 54
643478	William Layton	do	do	154 95
643484	Tillam Gillam	do	do	37 57
643491	George Dix	do	do	100 21
643492	Monroe Willis	do	do	60 44
643495	Albert McWherry	do	do	9 60
643529	Riley Ballew or Burlow	do	do	9 51
643530	do	do	do	12 00
643539	Martin Edwards	do	do	30 63
643544	London Barrett	do	do	38 93
643550	Daniel Tucker	do	do	133 68
643553	Isidore J. Kinney	do	do	78 25
643562	Isaac Maxwell	do	do	62 40
643567	Edward Mitchell	do	do	232 33
643568	do	do	do	10 00
643570	George I. Crawford	do	do	82 56
643571	do	do	do	12 00
643572	Jordan Talkidon	do	do	9 93
643573	do	do	do	10 00
643579	Benjamin Slaughter	do	do	42 26
643580	do	do	do	13 00
643583	James C. Whaley	do	do	528 72
643584	William J. Grimes	do	do	55 90
643591	John W. Osborn	do	do	52 80
643592	John Moll	do	do	34 23
643595	Sydney Smith	do	do	3 69
643597	Charles W. Teall	do	do	25 29
643604	Calvin Morse	do	do	29 46
643647	Frank Murry	do	do	22 40
643652	Gordon Chandler	do	do	24 70
643656	David Warren	do	do	61 00
643659	William Smith	do	do	11 34
643660	do	do	do	11 50
643671	Thomas Howard	do	do	10 22
590104	Thomas J. Johnson	do	do	97 88
638870	John S. Cundiff	do	do	61 20
640109	Noah Gullage	do	do	1 24
640209	Riley Gardner	do	do	10 80
640306	Thomas Noal	do	do	4 00
640319	Alfred Ewell	do	do	48 20
640407	Alexander Kennedy	do	do	4 12
640451	Philip McGee	do	do	6 06
640650	Daniel Bird	do	do	4 36
641487	Joseph Perkins	do	do	9 96
642943	James Bradshaw	do	do	12 93
643065	Samuel T. Agnew	do	do	28 66
643096	Richard R. Shimmins	do	do	61 53
643174	Amos Spencer	do	do	58 47
643303	John Morrison	do	do	13 48
643339	Henry Hatch	do	do	66 59

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
643340	Dier Sheley	Pay of two and three years' volunteers	1871 and prior years.	$25 56		
643344	John Roser	do	do	94 68		
643345	Augustus Smith	do	do	14 76		
643351	Erick Erickson	do	do	83 04		
643352	Dewitt C. Smyth	do	do	528 50		
643383	William H. H. Hagey	do	do	94 02		
643384	Daniel Cook	do	do	53 00		
643389	Isaac Brunson	do	do	9 56		
643391	Rynold Weinman	do	do	77 20		
643392	Isaac Marchess, *alias* John B. Quintal, jr.	do	do	46 80		
643574	James Coburn	do	do	247 03		
643575	do	do	do	5 00		
643576	do	do	do	5 00		
643605	James Gardner	do	do	30 17		
643610	Joseph Pace	do	do	18 41		
643622	Robert Coleman	do	do	8 13		
643633	Jesse Merkins	do	do	23 70		
643634	do	do	do	11 20		
643639	Henry Ball	do	do	91 22		
643640	do	do	do	11 30		
643663	Blunt Northcote	do	do	92 09		
643667	Anthony Washington	do	do	60 22		
643735	Newton Bomer	do	do	62 26		
643736	do	do	do	10 00		
643737	Stephen Long	do	do	48 53		
643754	Charles Waube	do	do	20 90		
643757	Henry Sample	do	do	25 44		
643760	David Crane	do	do	6 00		
643766	Joseph W. McManamy	do	do	36 54		
643777	Charles V. Patrick	do	do	19 20		
643783	Kilburn Knox	do	do	26 57		
643791	Robert Raines	do	do	13 43		
643794	John H. Piercy	do	do	46 20		
643799	Martin Nash	do	do	37 26		
643800	Andrew J. Mullholland	do	do	60 35		

643808	Virgil M. Carne	do	do	117 43		
643813	Abner Bickel	do	do	36 05		
643815	Lucas Schwank	do	do	59 78		
643816	Elijah Ponser	do	do	67 88		
643825	George Dean	do	do	56 60		
643826	do	do	do	10 00		
643922	Michael Migharity	do	do	85 53		
643923	William Willis	do	do	37 86		
643273	Isaac Johnson	do	do	58 58		
4304	D. E. Bishop	do	do	70 66		
4306	William M. Smith	do	do	20 32		
9496	Abner D. Doubleday	do	do	473 71		
9499	Abram Bowen	do	do	300 00		
9517	Andrew Ivory	do	do	506 67		
9518	John T. Talbot	do	do	130 30		
9568	Albert F. Rittenhouse	do	do	49 82		
9594	George H. Kilborn	do	do	350 43		
9636	A. F. Rockwell	do	do	113 86		
9670	Charles B. Wells	do	do	344 90		
9744	William H. Baker	do	do	115 99		
24	Edward Richardson	do	do	13 33		
52	John Carland	do	do	4 77		
73	William P. Martin	do	do	100 68		
95	Henry P. Ritzius	do	do	9 37		
123	John C. Wilson	do	do	421 10		
127	James McCarthy	do	do	9 43		
185	Charles C. Meade	do	do	59 29		
307	Amos H. Martin	do	do	274 44		
					$67, 993 87	In surplus fund.
642574	William R. Gibbons	Pay of Florida volunteers	1857–'58		765 00	Act March 3, 1859.
4918	Bailey Greenwood	Pay of volunteers (Mexican war)	1871 and prior years.	101 50		
638925	George R. Weber	do	do	82 36		
					183 86	Act March 2, 1847.
640966	Samuel Hardy	Traveling expenses, California and Nevada volunteers.			187 50	In surplus fund.
642855	George W. Deyo	Traveling expenses of members of First Michigan Cavalry.			198 50	Do.
640514	James W. F. How	Payment of mounted riflemen (volunteers) under Col. John C. Frémont, in 1846.		157 87		
640516	Isaac C. Isbell	do		75 00		
					232 87	Act August 31, 1852.
636736	Ellen Hofmeister	Pay of the Army	1878 and prior years.	2 75		
638306	William English	do	do	213 43		
639385	Edward J. Dowling	do	do	15 16		
639563	Marcus A. Boner	do	do	5 46		
639654	Jacob Lones	do	do	58 79		
639962	John Walsh	do	do	86 17		
639964	Thomas J. Elam	do	do	42 60		
639970	John Harrington	do	do	55 06		
640072	Patrick Riordan	do	do	32		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
640155	Charles Wiley	Pay of the Army	1878 and prior years.	$23 50		
640160	James Patterson	do	do	24 54		
640257	Peter Bonnet	do	do	28 64		
640525	Edward McCloskey or E. B. McCluskey	do	do	5 06		
640693	Margaret Meagher	do	do	15 75		
640802	John J. Lee	do	do	5 10		
640803	Frederick Lehmann	do	do	441 66		
640804	Richard Farrell	do	do	60 46		
640805	Joseph D. Thomas	do	do	38 77		
640806	Frederick J. Wells	do	do	17 34		
640807	Charles H. McDole	do	do	130 73		
640811	Morris Morton	do	do	63 73		
640816	Edward Mills	do	do	4 98		
640817	do	do	do	5 00		
641121	Maggie Thompson	do	do	2 00		
641130	Annie Hughes	do	do	7 75		
641136	Mrs. F. W. Eaton	do	do	2 10		
641174	John Young	do	do	113 87		
641175	do	do	do	10 00		
641176	George Weizeneeker	do	do	15 80		
641178	Charles Scott	do	do	100 92		
641179	Thomas A. Nippel	do	do	100 78		
641180	Jules Quesnel	do	do	68 49		
641181	Alfred Jacob	do	do	119 50		
641182	Vincent Schaerli *alias* Charley	do	do	60 86		
641184	Philetus Finch	do	do	140 58		
641190	George E. Gregory	do	do	106 48		
641513	Thomas Donoghue *alias* John Williams	do	do	56 92		
641514	John W. Bubb	do	do	38 04		
641515	Edward M. Hayes	do	do	66 66		
641517	H. J. Nowlan	do	do	91 40		
641519	J. H. Mahuken	do	do	162 18		
641557	Deborah Biggins	do	do	8 00		
641748	Ruthy Cross	do	do	28 75		

641931	James Drinam	do	do	32 71		
641934	W. J. Lyster	do	do	48 05		
641938	Charles O. Wood	do	do	79 96		
641939	Luther H. Peirce	do	do	172 74		
642017	Eliza Streit	do	do	7 50		
642018	Mary Murphy	do	do	7 00		
642022	Margaret Nee	do	do	19 10		
642024	Rebecca Wood	do	do	16 00		
642025	Mary Maher	do	do	2 00		
642027	Ann Dilly	do	do	20 00		
642028	Ellen Anderson	do	do	5 00		
642091	Mathew Gilligan	do	do	179 91		
642200	Charles Buckley	do	do	98 90		
642270	Frank Thorp	do	do	50 00		
642512	Michael McGarry	do	do	56 44		
642554	John Doran	do	do	16 43		
642557	Robert McKinstry	do	do	148 44		
642558	Otto H. Richter	do	do	49 38		
642572	Celia Glynn	do	do	1 50		
642578	Margaret Hennessy	do	do	6 00		
642580	Bella Rieder	do	do	4 00		
642591	Maximilian Baumann	do	do	36 00		
642760	Henry C. Coates	do	do	208 69		
642833	Thomas Flyun	do	do	35 97		
643224	Eliza Burns	do	do	7 50		
643226	Mattie Davis	do	do	6 00		
643295	Benjamin New	do	do	393 47		
643300	Charles H. Clay	do	do	86 82		
643302	John R. Larrimer	do	do	53 10		
643304	Edward Dunn	do	do	21 46		
9491	W. A. Kobbé, jr	do	do	8 13		
9498	Charles Gohé	do	do	32 50		
9500	William B. Royal	do	do	174 27		
9560	Charles H. Campbell	do	do	119 89		
9636	A. F. Roc w	do	do	72 22		
9696	George F. Price	do	do	12 25		
9707	Charles A. Hartwell, to be paid to F. Groos & Co., assignees.	do	do	70 59	.....	Arrears of pay in 1876, assigned to F. Groos & Co.
9743	Charles Newbold	do	do	87 64		
9922	William M. Maynadier, paymaster	do	do	1,980 00	.....	One year's pay deducted under act March 3, 1875, now allowed per decision of Second Comptroller.
9825	Alexander Chambers, lieutenant-colonel, Twenty-first Infantry.	do	do	4,375 00	.....	Pay withheld under section 1766 Revised Statutes, now due him.
9887	William C. Roundy	do	do	124 05		
9934	L. O. Parker	do	do	93 75		
73	William P. Martin	do	do	11 86		
82	John S. Loud	do	do	2 38		
83	William E. Dove	do	do	2 75		
95	Henry P. Ritzius	do	do	2 98		
308	Harry C. Johnson	do	do	312 47		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
320	Webster & Smith, holders of pay account of Lieutenant Iaeger.	Pay of the Army	1878 and prior years.	$116 67		Pay due to George A. Iaeger, lieutenant, Twelfth Infantry, for June, 1876, assigned to Webster & Smith.
321	J. H. Kellogg, captain, United States Army.	do	do	1,199 37		Arrears of longevity pay, July 1, 1870, to June 30, 1878.
					$13,314 92	In surplus fund.
2697	William H. Heuer	Expenses of recruiting	1878 and prior years		13 00	Do.
9972	Amos Cummings	Contingencies of the Army	1878 and prior years, 1864–'5.	506 50		Boring artesian well, Fort Scott, Kansas, in 1864 and 1865.
306	Mrs. Sarah Winnemucca	do	1878 and prior years.	500 00		Special services in the field in connection with Bannock Indian expedition, June, 1878.
					1,006 50	In surplus fund.
309	McDonald & Kline	Ordnance, ordnance stores, and supplies	1878 and prior years, 1862.		243 55	Horse equipments furnished Cass County Home Guards of Missouri, September, 1861. In surplus fund.
272	Mahlon B. Folwell	Artificial limbs	1878 and prior years.	2 00		
276	Kansas Pacific Railroad Company—to be paid to Secretary of Treasury, as per act May 7, 1878.	do	do	136 40		
					138 40	In surplus fund.
6	Henry Felter	Allowance for reduction of wages under the eight-hour law.	1868–'69		22 33	Services as laborer, Rock Island Arsenal, 1868 and 1869. In surplus fund.
9540	Herman Leusner, drafted man	Draft and substitute fund	1871 and prior years.	300 00		Refundment of commutation money, act February 28, 1867.
9569	James R. Bagley, drafted man	do	do	3 72		Travel pay on discharge.
9635	Justin Squires, drafted man	do	do	5 58		Do.
9705	First National Bank, Wilmington, Ohio, owner of check.	do	do	1 86		Do.
9714	Henry Hone, drafted man	do	do	300 00		Refundment of commutation money, act February 28, 1867.
23	Ephraim B. Condon, drafted man	do	do	2 79		Travel pay on discharge.
187	Richard Boyd, drafted man	do	do	300 00		Refundment of commutation money.
318	Joseph A. Matthews, drafted man	do	do	93		Travel pay on discharge.
					914 88	In surplus fund.

9513	Russell Brace	Medical and hospital department	1878 and prior years, 1863.	26 00		Medical services to volunteers, August and September, 1862.
9547	Jasper Bell	do	1878 and prior years, 1865.	21 60		Nurse, general hospital, David's Island, September, 1864.
9571	Henry Gilbert	do	1878 and prior years, 1862–'3.	645 82		Supplies, general hospital, Camp Curtin, Pennsylvania, 1862 and 1863.
9673	W. H. Bluett	do	1878 and prior years, 1877.	21 00		Medical services to private of signal service, April, 1877.
9688	William Harvey	do	do	127 30		Do.
9726	Jabez Challacombe	do	1878 and prior years, 1862.	22 25		Nurse, Fort Scott, Kansas, 1862.
9866	Charles E. Shindlebower	do	do	88 33		Supplies for hospitals, Danville, Ky., 1862.
234	John Thornton	do	1878 and prior years, 1865.	120 00		Medical services, Fort Gibson, Arkansas, 1865.
					1, 072 30	In surplus fund.
9423	F. J. H. Mahuke	Collecting, drilling, and organizing volunteers.	1871 and prior years, 1862.	81 00		Reimbursement of expense of subsisting recruits in 1862.
9548	James Starkey	do	do	180 00		Do.
9664	H. B. Hendershott, captain, United States Army.	do	do	63 22		Balance due on final settlement of accounts.
264	Benjamin Jenifer	do	1871 and prior years, 1863.	27 60		Forage for recruits of Ohio Cavalry, August, 1862.
					351 82	In surplus fund.
	Total				251, 058 84	

RECAPITULATION OF WAR DEPARTMENT CLAIMS ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER.

Bounty to volunteers and their widows and legal heirs, 1871 and prior years	$164, 419 54
Pay of two and three year volunteers, 1871 and prior years	67, 993 87
Pay of Florida volunteers, 1857–'58	765 00
Pay of volunteers (Mexican war), 1871 and prior years	183 86
Traveling expenses California and Nevada volunteers	187 50
Traveling expenses of members of First Michigan Cavalry	198 50
Payment of mounted riflemen (volunteers) under Col. John C. Frémont in 1846	232 87
Pay, &c., of the Army, 1878 and prior years	13, 314 92
Expenses of recruiting, 1878 and prior years	13 00
Contingencies of the Army, 1878 and prior years	1, 006 50
Ordnance, ordnance stores, and supplies, 1878 and prior years	243 55
Artificial limbs, 1878 and prior years	138 40
Allowance for reduction of wages under the eight-hour law	22 33
Draft and substitute fund, 1871 and prior years	914 88
Medical and hospital department, 1878 and prior years	1, 072 30
Collecting, drilling, and organizing volunteers, 1871 and prior years	351 82
Total	251, 058 84

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	INTERIOR DEPARTMENT.					
	CLAIMS.					
3519	Edwin A. Howard, Indian agent	Pay of Indian agents	1878 and prior years.	$167 16		Arrears of pay due on final settlement of accounts to August 10, 1876.
7861	John B. Jones, Indian agent	do	do	37 64		Arrears of pay due on final settlement of accounts to October 13, 1874.
7930	James Lawrence, Indian agent	do	do	322 52		Arrears of pay due on final settlement of accounts to December 31, 1877.
9502	R. A. Wilbur, Indian agent	do	do	67 93		Arrears of pay due on final settlement of accounts to August 26, 1872.
9566	Edwin A. Howard, Indian agent	do	do	43 57		Arrears of pay due on final settlement of accounts to December 19, 1877.
111	Thomas J. Mitchell, Indian agent	do	do	584 89		Arrears of pay due on final settlement of accounts to June 22, 1877.
619	R. A. Wilbur, Indian agent	do	do	428 43		Arrears of pay due on final settlement of accounts to April 12, 1875.
723	T. W. Taliaferro, Indian agent	do	do	374 10		Arrears of pay due on final settlement of accounts to March 31, 1876.
809	William H. Fanton, Indian agent	do	do	620 40		Arrears of pay due on final settlement of accounts to July 1, 1876.
812	William B. Davis, Indian agent	do	do	305 81		Arrears of pay due on final settlement of accounts to June 30, 1869.
917	Charles Hudson, Indian agent	do	do	375 00		Arrears of pay due on final settlement of accounts to March 31, 1877.
1266	Charles Matthewson, Indian agent	do	do	498 38		Arrears of pay due on final settlement of accounts to June 30, 1869.
1364	A. R. Howbert, Indian agent	do	do	114 86		Arrears of pay due on final settlement of accounts to April 12, 1875.
1456	George W. Frost, Indian agent	do	do	4 08		Arrears of pay due on final settlement of accounts to November 14, 1878.
1814	William Burgess, Indian agent	do	do	548 59		Arrears of pay due on final settlement of accounts to June 30, 1877.
2046	James Davis, Indian agent	do	do	182 78		Arrears of pay due on final settlement of accounts to April 15, 1877.
2461	John J. Saville, Indian agent	do	do	44 24		Arrears of pay due on final settlement of accounts to December 2, 1875.
					$4,720 38	
5151	Albert Parsons, Indian agent	Contingencies of the Indian Department	1878 and prior years.		124 82	Due on final settlement of accounts, April 1, 1873, to June 30, 1874.

9502	R. A. Wilbur, Indian agent	Incidental expenses, Indian service in Arizona.	....do	14 90		Due on final settlement of accounts, July 15, 1871, to August 15, 1872.
619	R. A. Wilbur, agency physician	.....do	....do	817 11		Salary fourth quarter, 1875, first quarter, 1876, and first and second quarters, 1877.
2051	F. V. B. Gildersleeve, claimant	.....do	....do	200 00		Medical services, &c., in January, 1878.
					1,032 07	
3519	Edwin A. Howard, Indian agent	Incidental expenses, Indian service in Dakota.	1878 and prior years.	27 39		Due on final settlement of accounts, June 1, 1873, to August 10, 1876.
2464	John J. Saville, Indian agent	.....do	....do	786 22		Due on final settlement of accounts, January 24, 1874, to December 2, 1875.
					813 61	
2122	R. F. May, Indian agent	Incidental expenses, Indian service in Montana.	1878 and prior years.		31 25	Due on final settlement of accounts, March 11, 1874, to January 13, 1875.
1632	R. I. Eskridge, captain, Twenty-third Infantry.	Incidental expenses, Indian service in Wyoming.	....do		13 10	Reimbursement of expenses as inspector of Indian supplies in 1875 and 1876.
8213	Benjamin M. Thomas, Indian agent	Support of Apaches of Arizona and New Mexico.	....do	48 26		Due on final settlement of accounts, February 25, 1873, to November 11, 1874.
2440	Warren E. Day, M. D	.....do	....do	160 00		Services, April and May, 1874.
					208 26	
1802	Ebenezer Douglass, Indian agent	Support of Chippewas, Pillager, and Lake Winnebagoshish bands.	1878 and prior years.		24 14	Due on final settlement of accounts, April 1, 1873, to June 30, 1874.
1802	.....do	Support of the Chippewas of the Mississippi.	....do		271 16	Do.
708	W. W. Morris, claimant	Support of Crows	....do		30 33	Medical supplies, July to October, 1876.
868	W. W. Edgar, special commissioner for removal of Kickapoo Indians.	Support of Kickapoos	....do		46 27	Due on final settlement of accounts, May 13, 1875, to July 27, 1876.
3519	Edwin A. Howard, Indian agent	Support of Sioux of different tribes, including Santee Sioux of Nebraska.	....do	240 68		Due on final settlement of accounts, June 1, 1873, to August, 10, 1876.
3520	Edwin A. Howard, disbursing agent sub-committee of Sioux commission.	.....do	....do	410 84		Reimbursement of expenses, October to December, 1876.
847	John T. Williamson, Indian agent	.....do	....do	64 71		Due on final settlement of accounts, January 1, 1874, to August 9, 1878.
2464	John J. Saville, Indian agent	.....do	....do	220 50		Due on final settlement of accounts.
					936 73	
714	Justus C. Ramsey, special agent	Payment to Upper and Lower bands of Sioux Indians.			375 00	Salary, June to September, 1874.
1430	Steamer Benton	Transportation of Indian supplies	1878 and prior years.		23 45	Transporting Indian supplies, August, 1877.
	Total				8,650 57	

NOTE—The balances of appropriations from which the above amounts are payable have been carried to the surplus fund.

RECAPITULATION OF INTERIOR DEPARTMENT CLAIMS ALLOWED BY THE SECOND AUDITOR AND SECOND COMPTROLLER.

Pay of Indian agents	$4,720 38	Support of Kickapoos	$46 27
Contingencies of the Indian Department	124 82	Support of Sioux of different tribes, including Santee Sioux of Nebraska	936 73
Indian service in the Territories	1,890 03	Payment to Upper and Lower bands of Sioux Indians	375 00
Support of Apaches of Arizona and New Mexico	208 26	Transportation of Indian supplies	23 45
Support of Chippewas, Pillager, and Lake Winnebagoshish bands	24 14		
Support of Chippewas of the Mississippi	271 16	Total	8,650 57
Support of Crows	30 33		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT JUNE 14, 1878.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT.					
	CLAIMS.					
7069	E. B. Allen	Army transportation, 1878 and prior years (Revised Statutes. section 1133).	1875	$418 07		
7084	S. W. Fitzpatrick	do	1866	410 43		
7186	T. B. Flippen	do	1864	23 00		
7204	Archie Young	do	1865	62 40		
7231	William and Julia Rivers	do	1866	174 62		
7264	Willard Brothers	do	1862	75 00		
7298	Chicago, Milwaukee and Saint Paul Railroad Company.	do	1866	1, 522 08		
7306	Rolla Banks	do	1864	25 00		
7307	Jacob Barnhart	do	1863	40 00		
7415	William Barringer	do	1865	25 00		
7436	N. T. Moore	do	1866	84 75		
7470	Philadelphia, Wilmington and Baltimore Railroad Company.	do	1863, 1864, 1865	9, 049 50		
7560	Daniel S. Hines, deceased; Joseph B. Hines, administrator.	do	1862	69 86		
7621	Chicago, Saint Louis and New Orleans Railroad Company.	do	1874	1 26		
7681	Thomas J. Scruggs	do	1863	69 53		
7682	Miles H. Merry	do	1862	21 92		
7860	New Orleans, Jackson, Great Northern and Mississippi Central Railroad Company.	do	1874	10 62		
7861	Mississippi and Tennessee Railroad Company.	do	1876	5 57		
7865	Steamer Marquketa and owners	do	1863	400 00		
7866	Carlyle Bridges, deceased, and R. H. Riggins.	do	1863	27 50		
7867	Charles Newbold	do	1867	292 00		
7869	Harlow & Burns	do	1864 and 1865	62 50		
7871	Lemmerman & Coney	do	1875	11 00		
7872	Harts Carter	do	1866	105 00		
7875	John Shearer	do	1863 and 1864	35 00		
7876	Elihu Ward	do	1862	102 00		
7151	Morgan's Louisiana and Texas Railroad Company.	do	1879	733 35	.....	Act March 3, 1879.

7618	Herman C. Brown, administrator of Louis Pechet, deceased.	....do	1878	456 22		
7695	Andrew Stoker and Loewenberg Brothers.	....do	1878	132 50		
7851	Atlanta and West Point Railroad Company.	....do	1878	29 17		
7857	Raleigh and Gaston and Raleigh and Augusta Air Line Railroad Company.	....do	1878	31 95		
7924	Missouri Pacific Railroad Company	....do	1874	570 23		
7954	John H. Reed	....do	1864	325 00	.....	See list "Cavalry and artillery horses."
7971	Eastern Railroad Company	....do	1878	3 00		
7972	....do	....do	1869	3 00		
7979	Henry Yingling	....do	1863	25 00		
7990	Ratoun Wagon Road Company	....do	1865	469 73		
7991	William Young	....do	1865	22 00		
4309	John Mix, captain Second United States Cavalry.	....do	1877	35 60	.....	Settlement of account.
7759	John P. Vollmer	....do	1878	850 00		
7938	Henry Countryman	....do	1878	20 00		
9288	S. B. Coulson	....do	1877	150 00		
9345	Northern Pacific Railroad Company	....do	1877 and 1878	331 48		
9349	Gilmer, Salisbury & Co	....do	1878	41 00		
7471	Pleasant S. Scott	....do	1864	58 02		
9360	John C. H. Richter	....do	1862	15 00		
9408	Philip Grebing, deceased; Catherine Grebing, widow.	....do	1864	42 09		
9413	W. H. Stark	....do	1865	54 00		
9309	James C. How	....do	1865	150 00		
9404½	William Parry, deceased; Sarah R. P. Johns, administratrix.	....do	1863	278 00		
9454	Lord (or Lovell) Humphrey	....do	1866	14 00		
9455	B. F. Darlington	....do	1863	108 00		
9455	Solomon Ratcliffe	....do	1862	111 00		
9458	R. A. McKay	....do	1866	20 00		
9539	Summerville and Walla Walla Wagon Road Co	....do	1876	100 65		
9573	Saint Louis, Vandalia, Terre Haute and Indianapolis Railroad Company.	....do	1877	64 68		
9575	Mobile and Montgomery Railroad Company.	....do	1868 and 1869	36 39		
9580	Baltimore and Ohio Railroad Company	....do	1862	5 75		
9585	Chicago, Milwaukee and Saint Paul Railroad Company.	....do	1876	1 65		
9586	Pennsylvania Railroad Company	....do	1877	4 19		
9587	Kansas City, Saint Joseph and Council Bluffs Railroad Company.	....do	1877	11 25		
9589	Pennsylvania Railroad Company	....do	1874, 1875, 1876	3 80		
9591	Martin B. Woolfley	....do	1863	331 83		
9591	Richard Connors	....do	1863	65 15		
9500	Delaware and Hudson Canal Company	....do	1877	16 01		
9507	Joseph Holbrook	....do	1876 and 1877	46 75		
9610	William Patchell	....do	1861	187 50		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
9610	James H. Summers	Army transportion, 1878 and prior years (Revised Statutes, section 1133).	1861	$187 50		
9610	William P. Wright	do	1861	187 50		
9610	Frederick Ford	do	1861	187 50		
9610	James Golden	do	1861	187 50		
9627	Santa Fé Stage Company	do	1866	334 00		
9628	Delaware and Hudson Canal	do	1878	6 22		
9658	W. George Myers	do	1864	9 00		
9659	James M. Barney	do	1878	292 73		
9704	James Parker, lieutenant U. S. A	do	1878	3 00		
9705	John P. Steman (or Stehman)	do	1864	10 00		See lists of "Regular supplies," and "Subsistence of the Army."
9802	Alfred Moore	do	1862	41 37		
9820	Stephen Flanagan	do	1863	10, 450 00		
9629	Missouri, Kansas and Texas Railway Company.	do	1878	2 78		
9834	John L. Charles	do	1862	106 60		
9854	Missouri and Western Railroad Company, now known as Saint Louis and San Francisco Railroad Company.	do	1876 and 1878	28 10		
9855	Baltimore and Ohio Railroad Company	do	1862 to 1870	7, 583 61		
9860	William Burke, deceased; Annie Burke, administratrix.	do	1875 to 1877	1, 379 00		
9870	Baltimore and Ohio Railroad Company	do	1878	156 00		
9909	do	do	1862 and 1863	15 97		
9911	E. A. C. Hatch	do	1869	280 00		
9963	John T. Wright, deceased; George S. Wright, administrator.	do	1862	1, 002 06		
9968	George W. Thompson	do	1864	10 00		
9969	Hugh Means	do	1863 and 1864	33 53		
9969	William Biggs	do	1863 and 1864	67 06		
9969	W. Halley Smith	do	1863 and 1864	33 53		
9969	John W. White, deceased; Richard Reid, administrator.	do	1863 and 1864	33 53		
9969	R. Apperson, sr., deceased; Louis Apperson, administrator.	do	1863 and 1864	100 59		

9981	William Wright	....do	1877	8 00	
31	James M. Barney	....do (Part)	1878	623 63	
22	Edwin (or Edmund) Turner, deceased; Sarah Turner, widow.	....do	1864	58 75	
26	Louis Lambert	....do	1863	106 66	
30	William Cooper	....do	1862	10 00	
30	Nathaniel N. Parberry	....do	1862	38 00	
30	Daniel McPherson	....do	1862	12 75	
30	Joseph Sappington	....do	1862	28 50	
30	William Gorshong	....do	1862	15 75	
					$42,759 27
7064	W. A. McHolstead	Regular supplies, Quartermaster's Department, 1878 and prior years (Revised Statutes, section 1133).	1863	18 00	
7116	James Dobbs, deceased; J. H. Gant, administrator.	....do	1865	209 58	
7120	Richard Colvin, deceased; Fannie Colvin, widow.	....do	1862	35 00	
7166	John A. Coan and Asa W. Coan	....do	1863	5,000 00	
7206	John Twohig	....do	1868 and 1869	154 16	
7206	Maria Furguson	....do	1868 and 1869	65 60	
7206	Emma Furguson	....do	1868 and 1869	167 28	
7206	Robert Becham	....do	1868 and 1869	137 76	
7213	Joel Thornburg	....do	1865	16 05	
7219	William B. Payne	....do	1862	16 00	
7310	John B. Bragg, deceased; Lucinda Bragg, widow.	....do	1862	90 00	
7350	Joseph Horst	....do	1862	45 00	
7351	John B. Hill	....do	1863	105 00	
7354	F. M. Goodpasture	....do	1866	8 00	
7355	James Mac Gill	....do	1864	12 00	
7427	Landon D. Craig	....do	1863	100 56	
7428	Craven Berry	....do	1863	12 50	
7473	J. M. Smith	....do	1863	80 46	
7479	Samuel J. Wadley; J. C. Walker, holder and owner.	....do	1865	60 00	
7565	Charles Asher	....do	1868	6 25	
7566	Benjamin Atchinson	....do	1863	28 00	
7568	Thomas Jackson	....do	1863	30 00	
7569	Theophilus Harris	....do	1863	24 00	
7570	W. M. Carper	....do	1865	40 00	
7595	A. J. Williams	....do	1863	117 75	
7736	Luke Lassiter, jr	....do	1863	80 00	
7737	Isaac Pidgeon	....do	1865	140 00	
7739	William W. Douglas	....do	1863	50 50	
7740	A. C. Candill	....do	1863	7 20	
7762	William Jordan	....do	1863	14 01	..... See list "Subsistence of the Army.'
4248	Alex. D. Schenck, lieutenant Second United States Artillery.	....do	1877	5 75	
7955	Hiram Showman	....do	1863	52 98	
7956	O. P. Nelson	....do	1865	10 50	
7957	H. D. Ordman	....do	1865	18 75	

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
7958	Colloway Robbins	Regular supplies, Quartermaster's Department, 1878 and prior years (Revised Statutes, section 1133.)	1865	$9 25		
7959	James Chambers	do	1865	154 00		
7960	Gary & Tappan	do	1876	129 85		
7978	Turner Binkley	do	1863	31 20		
7980	Josiah Stallings	do	1866	93 00		
7981	M. Barrett	do	1877	18 50		
9236	Nancy Beard	do	1864	30 00		
9302	John J. Kelly; Barnes, White & Co., holders and owners.	do	1865	180 00		
7472	J. B. Stribling, deceased; S. A. Carrell, administrator.	do	1865	40 00		
9310	A. B. Ewton	do	1865	15 00		
9362	Francisco Yturria	do	1877	35 38		
9459	J. M. Corley	do	1862	11 00		
9460	Matthews & Dunn	do	1878	135 00		
9456	Henry F. Lines	do	1864 and 1865	6 71		See lists "Barracks and quarters" and "Subsistence of the Army."
9581	Henderson Holland	do	1863	16 00		
9582	R. S. Foster	do	1864	64 00		
9584	H. W. Chastine	do	1864	15 25		
9691	W. H. Brofford	do	1866	3 01		
9691	Elisha Evans	do	1865	2 92		
9691	Archibald Brittain	do	1866	2 71		
9693	Joseph Tucker	do	1863	232 50		
9705	John P. Steman (or Stehman)	do	1864	222 00		See lists "Army transportation" and "Subsistence of the Army."
9845	A. Kinkaid, deceased; James A. Kinkaid, executor.	do	1864	43 60		
9907	David Neal	do	1865	100 00		
29	E. C. Medlin, deceased; E. Lee, administrator.	do	1863	10 00		
					$8,859 52	
3325	William Gerlach, lieutenant Third Infantry.	Incidental expenses, Quartermaster's Department, 1878 and prior years (Revised Statutes, section 1133).	1877	2 79		Settlement of account.

3409	A. C. Markley, lieutenant Twenty-fourth Infantry.	do	1877	1 00		Do.
3421	John S. Ward, lieutenant Seventeenth Infantry.	do	1865	3 32		Do.
7085	Oregonian Publishing Company	do	1876	22 00		
7126	R. Seely, deceased; Isabel S. Seely, widow.	do	1862	272 00		
7178	Jacob Portlack	do	1865	33 33		
7179	W. F. Higgins	do	1876	2 00		
7180	James G. Brown	do	1877	25 00		
7207	Grandison Washington	do	1862 and 1863	21 05		
7208	George W. Weed	do	1870	15 40		
7225	Doc. Randolph	do	1865	20 00		
7227	Elisha Roberts	do	1863 and 1864	90 36		
7228	Joab Stafford	do	1865	143 42		
7308	William De. Bell	do	1862	140 00		
7309	Dr. John B. Bell	do	1865	15 90		
7121	T. H. Logan, lieutenant Fifth Infantry	do	1877	24		
7356	Anton Hanneman, deceased; Anna Hanneman, widow.	do	1862	33 38		
7357	Felix Jarmon	do	1863	18 33		
7358	M. M. Mead	do	1847	10 37		
7360	Thomas Mullins	do	1863	45 98		
7440	J. N. McCrary	do	1864	23 00		
7441	Peter Mersch	do	1867	89 25		
7443	Moses Murphy	do	1863	18 93		
7444	Thomas McCammon	do	1863	208 80		
7481	Henry Thomas	do	1864	41 25		
7581	Lewis Fee, deceased; Catharine Circle, widow of.	do	1863	24 00		
7609	Felix G. Welman, deceased; William Welman, father of.	do	1863	86 25		
7625	Nicholas A. Everhart, deceased; Amelia Everhart, widow of.	do	1865	86 62		
7728	Thomas Hoffman	do	1865	87 50		
7729	W. S. Harwell, deceased; A. B. Harwell, administrator.	do	1864	75 00		
7730	John Williams	do	1864	29 16		
7731	Daniel Romigh	do	1864 and 1865	417 15		
7732	Alfred Porter	do	1864	30 00		
7733	Alexander McDonald	do	1865	9 33		
7734	J. W. Johnson	do	1877	123 00		
7773	Philip Munroe	do	1864	41 67		
4074	H. H. Humphrey, captain Fifteenth United States Infantry.	do	1877	1 08		
7943	William Wilson	do	1864 and 1865	150 00		
7943	Enoch Berrisford	do	1864 and 1865	23 00		
7943	Thomas Kenalley	do	1864 and 1865	23 00		
7943	Michael Burns	do	1864 and 1865	23 00		
7944	Charles A. Minton	do	1865	422 00		
7964	William Wilson	do	1865	35 00		
7965	Matt Wilborne	do	1864	60 00		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
7966	William T. Yancey	Incidental expenses, Quartermaster's Department, 1878 and prior years (Revised Statutes, section 1133.)	1865	$211 50		
9232	Thomas Gray	do	1864	45 00		
9232	James Wright	do	1864	45 00		
7086	Thomas Cochran; P. H. Kelly & Co., holder and owners.	do	1878	35 71		
7182	J. Nolan; Second National Bank of Saint Paul, holder and owner.	do	1878	70 00		
7362	F. M. Hubbard; First National Bank of Idaho, holder and owner.	do	1878	29 16		
7437	Dan. McCarty	do	1878	87 50		
7437	George Wilson	do	1878	100 00		
7437	Z. F. Hays	do	1878	120 83		
7584	H. C. Coats	do	1878	66 67		
7665	William Myers, deceased	do	1878	87 50		
7694	J. F. Kelly	do	1878	320 00		
7694	Henry Taylor	do	1878	59 95		
7694	Burns Smith	do	1878	177 11		
7694	John Sullivan	do	1878	24 00		
7694	John Johnson	do	1878	25 50		
7694	Miles Hinson	do	1878	38 14		
7694	Edward Hamilton	do	1878	29 24		
7694	B. Landon	do	1878	37 33		
7726	Garrett Farley	do	1878	21 70		
7726	Thomas Mathers	do	1878	21 70		
7726	B. F. Smith	do	1878	21 70		
7726	P. Finnigan	do	1878	12 40		
7726	William Nubel	do	1878	12 40		
4413	George H. Weeks, major and quartermaster, U. S. A.	do	1877	12	.....	See list "Barracks and quarters."
7181	A. Bennett	do	1878	235 56		
9443	William H. Going	do	1878	56 00		
9452	W. P. Howard, lieutenant Second United States Artillery.	do	1878	1 26		
9685	John O. Malker (or Marki)	do	1862	6 80		

9686	P. H. Ready	do	1878	32 00	
9703	James Masterson	do	1878	30 00	
9856	David Shœner	do	1864	203 43	
9867	Windfield Barber	do	1863	27 75	
9872	J. C. Patterson, deceased; J. W. Campbell, administrator.	do	1865	155 00	
9883	Green W. Davis	do	1862	49 16	
9884	Michael Fitzpatrick	do	1877	30 00	
9508	Union Pacific Railroad Company	do	1878	1,459 87	
9982	Charles William Simpson	do	1862 and 1863	16 40	
9983	William C. Beckwith	do	1863	33 75	
9984	William Taylor, deceased; Ann Taylor, widow.	do	1864	15 00	
9985	Patrick Miner	do	1862	13 60	
9986	M. J. Broderick	do	1877	30 00	
9996	G. Meyer	do	1878	22 66	
9998	W. J. Ladd	do	1864	26 88	
9999	J. F. Patterson	do	1864	26 88	
10000	J. W. Peck	do	1863	40 00	
1	James H. Williams	do	1862 and 1863	84 00	
4	Adolp Seibel	do	1863	27 00	
5	Frank Swick	do	1864 and 1865	237 00	
6	John H. Pressey	do	1865	51 00	
7	Thomas Sallee	do	1865	15 00	
8	Thomas L. Morgan; A. P. Richardson, holder and owner.	do	1863	12 00	
10	Julius Lee	do	1865	67 64	
11	Charles Kopp	do	1863	31 10	
14	Andrew Harris	do	1862 and 1863	93 50	
16	Tillmon G. Fly	do	1865	12 00	
18	Mahlon D. Cross	do	1866	87 92	
19	Charles Constantine	do	1863	48 00	
20	John J. Bloomer	do	1863	11 62	
21	G. W. Banks	do	1878	87 50	
21	Joe Smith	do	1878	44 00	
					$8,165 30
7026	Edward T. Wood	Barracks and quarters, 1878 and prior years (Revised Statutes, section 1133).	1865	666 66	
7117	John W. Farrow	do	1863–'64, & –'65	1,808 33	
7118	James C. Layne	do	1864	21 00	
7092	H. L. Chisolm	do	1875–'76, & –'77	150 00	
7185	William Douglas	do	1861–'62–'63–'64, and –'65.	1,520 06	
7217	S. T. and R. Langley	do	1865	64 00	
7311	A. C. Bell	do	1865	30 00	
7562	Trustees of the Methodist Episcopal Church, Beverly, Va.	do	1862–'63, & –'64	1,000 00	
7563	Trustees of the Cumberland Presbyterian Church, Springfield, Mo.	do	1862–'63–'64, & –'65.	1,220 00	
7596	Timothy Wright	do	1864 and 1865	900 00	
7617	Belvidere Hall Association of Cumberland, Md.	do	1862	75 00	

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
7735	J. B. Witherby	Barracks and quarters, 1878 and prior years (Revised Statutes, section 1133).	1863	$24 00		
7779	Leland Kittle	do	1865	40 00		
7831	George L. Towner	do	1865	600 00		
7844	Methodist Episcopal Church and Methodist Episcopal Church South.	do	1861 to 1865	1,000 00		
7877	D. D. Berry, deceased; Jeorge M. Jones, administrator.	do	1863 and 1864	2,132 66		
5716	Harriet C. Hill and James H. Hill	do	1866	98 33		By clerical error omitted from previous list.
4413	George H. Weeks, major and quartermaster, U. S. A.	do	1877	1 20		See "Incidental expenses."
9456	Henry F. Lines	do	1864	42 93		See "Regular supplies" and "Subsistence of the Army."
9700	E. T. Carr	do	1878	100 00		
9912	J. T. Swayne	do	1866 to 1869	524 50		
9912	Benjamin Coleman and A. Alston	do	1866 to 1869	316 50		
9972	John W. Twiggs	do	1866 and 1867	1,241 80		Allowed by Second Comptroller.
9972	Marion Twiggs Myers	do	1866 and 1867	2,026 67		Do.
					$15,603 64	
7091	William F. Cooley	Horses for cavalry and artillery, 1878 and prior years (Revised Stats., section 1133).	1865	145 00		
7187	L. W. Williams	do	1865	150 00		
7193	William C. Dial	do	1864	125 00		
7364	George Furrier	do	1864	95 00		
7453	Hamilton K. Moore	do	1865	150 00		
7579	E. S. Cole	do	1864	95 00		
7580	William Cole	do	1864	75 00		
7622	James H. Cummings	do	1865	140 00		
7691	Charles H. Lane	do	1865	145 00		
7692	John E. Barrett	do	1864	140 00		
7693	Ira C. Monroe, deceased; Atherton Monroe, father of.	do	1864	112 00		
7780	Robert M. Hughes	do	1862	95 00		
7840	Alexander Drake	do	1862	110 00		

7841	George M. Alexander; James B. Eads, holder and owner.	....do	1863	105 00		
7951	Abner H. H. Carey	....do	1863	68 00		
7952	Edward Mytton	....do	1863	100 00		
7953	John Robertson	....do	1865	100 00		
7953	Benjamin F. Robertson	....do	1865	100 00		
7954	John H. Reed	....do	1863	125 00	.....	See list "Army transportation."
9239	Jeremiah F. Henderson	....do	1863	60 00		
9276	Thomas W. Wiley; William M. Murray, holder and owner.	....do	1864	100 00		
9462	J. A. Epley, deceased; David Epley, deceased, father of; Hugh C. Davidson, administrator.	....do	1865	125 00		
9463	Jonathan Wooten	....do	1864	75 00	.....	See list "Subsistence of Army."
9665	William C. Griffin	....do	1865	150 00		
9666	John E. Earle	....do	1865	80 00		
9709	Augustus Marshall	....do	1864	125 00		
9800	John Lewis, deceased; J. W. Hunt, administrator.	....do	1864	125 00		
9849	James W. Page	....do	1864	150 00		
9908	James M. Pierce	....do	1864	111 00		
9964	William L. Smith; Samuel Guggenhine, holder and owner.	....do	1865	145 00		
9964	William Miller; Samuel Guggenhine, holder and owner.	....do	1865	145 00		
					3,566 00	
7095	C. V. Ellis	Subsistence of the Army, 1878 and prior years (Revised Statutes, section 1141).	1865	70 50		
7119	William Ferguson; J. W. Robertson, holder and owner.	....do	1864	23 10		
7221	William H. Roseberry	....do	1864	7 50		
7222	E. Lucas	....do	1865	315 00		
7223	Ansil Sturge	....do	1865	8 00		
7348	William Lewis	....do	1864	96 25		
7480	Dudley Richardson	....do	1864	18 25		
7585	John Jones	....do	1864	199 00		
7586	Fred. Brauhn	....do	1864	7 50		
7587	Charles Higgins	....do	1864	5 00		
7588	M. H. Connor	....do	1865	22 00		
7597	George White	....do	1862 and 1863	103 50		
7598	Leonidas L. Wilson	....do	1863 and 1864	60 75		
7762	William Jordan	....do	1863	12 40	.....	See "Regular supplies" for $14.01.
7689	George W. Burt	....do	1865	5 00		
7742	M. A. Pitman	....do	1862	36 22		
7743	John B. Boyd	....do	1865	22 32		
7744	John Mandlin	....do	1865	7 50		
7827	James E. Glascow	....do	1865	7 25		
7931	Rebecca Shaffner; J. R. Ferrell, holder and owner.	....do	1864	16 37		
7932	James A. Ralston	....do	1865	7 50		
7933	George K. Satchell	....do	1865	7 50		
7934	Henry Adams	....do	1865	6 25		
7935	Peter Shaddy	....do	1862	14 50		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
7936	Josiah Daily, deceased; Tillman A. King, administrator.	Subsistence of the Army, 1878 and prior years (Revised Statutes, section 1141).	1864	$75 00		
7937	Margaret McLendon (now Margaret Floyd.	do	1865	4 80		
9240	George W. Blackman	do	1863	5 00		
9263	M. Kraszynski	do	1872	44 68		
9301	James Gannon	do	1864	7 50		
9311	James Malone	do	1864	16 25		
9312	Addison G. Moore	do	1865	5 00		
9313	Nathaniel Smith	do	1864	7 50		
9350	Mrs. E. W. Pullen	do	1865	150 00		
9390	Byron Allen	do	1864	11 25		
9446	Samuel Rowe	do	1862	9 75		
9448	David H. James	do	1862	6 75		
9449	John Kantenberger	do	1865	7 50		
9450	Samuel Goodwin	do	1878	18 00		
9450	George P. Sears	do	1878	9 75		
9463	Jonathan Wooten	do	1864	104 00		
9464	D. L. Bradley	do	1864	22 00		
9465	David Maxwell	do	1865	8 75		
9456	Henry F. Lines	do	1864 and 1865	65 60	----------	See "Regular supplies" and Barracks and quarters" lists.
9531	John M. Nash	do	1865	5 00		
9532	Richard L. Mosher	do	1865	21 75		
9533	Daniel Fritz, deceased; John Fritz, father of.	do	1865	10 50		
9534	Edwin Flin; father of John H. Flin, deceased.	do	1865	7 50		
9535	Orson C. Cole	do	1865	6 25		
9536	John W. Chapman	do	1865	5 00		
9537	John M. Book	do	1865	3 75		
9538	Alfred D. Ashcraft	do	1865	7 50		
9593	Otis G. Spear	do	1864	8 75		
9609	Lewis Bender	do	1862	12 75		
9639	Henry C. Hopper	do	1865	29 75		
9640	Irena Morgan	do	1865	3 60		

9641	Robert Owen	do	1863	300 00		
9642	Jeptha V. Nichols	do	1865	7 50		
9644	Thomas V. Pensul	do	1865	7 50		
9691	John Pitman	do	1864	6 10		See list regular supplies.
9702	John H. Morgan	do	1864	7 75		
9705	John P. Steman (or Stehman)	do	1864	4 00		See lists Army transportation and regular supplies.
9877	William H. Kennedy	do	1865	52 75		
9893	Martilus Hill	do	1864	7 50		
9906	Herman Tiffany	do	1865	7 50		
70	Oliver J. Armstrong	do	1865	16 50		
72	Shelton Morris	do	1864	15 00		
					2, 212 44	
7088	Byron Everham	Commutation of rations to prisoners of war, prior to July 1, 1878. 14 Stat. at Large, sections 364 and 422.	1864 and 1865	44 00		
7089	Lucius S. Mosely	do	1863	7 00		
7090	John Fauhnan	do	1863	3 00		
7211	Almrine M. Winkle	do	1864	20 25		
7212	Andrew J. Truell, deceased; Jane L. Truell, mother.	do	1864	58 00		
7218	Jacob Nadeau, deceased; Amable and Mary Nadeau, parents.	do	1864 and 1865	74 00		
7346	Benjamin Edwards, deceased; Polly Edwards, widow.	do	1864 and 1865	78 25		
7347	Thomas Harris	do	1863	9 75		
7373	John Buckmaster, deceased, heirs of	do	1864 and 1865	97 75		
7445	C. J. R. McFall	do	1864 and1865	76 50		
7446	Jacob H. Miller	do	1865	9 75		
7447	Thomas Murphy	do	1863 and 1864	7 50		
7448	Ross McKenzie, deceased; Charlotte McKenzie, widow.	do	1863 and 1864	49 00		
7474	William W. Staubs, deceased; Sarah S. Staubs, widow.	do	1864 and 1865	25 50		
7475	Ellis Sones	do	1862 and 1863	27 25		
7482	Charles B. Stevenson	do	1862 and 1863	31 25		
7483	Hoel C. Wright	do	1862 and 1863	7 50		
7530	Philip C. Whitenight	do	1865	17 75		
7545	Benjamin Eaton	do	1864 and 1865	85 00		
7546	George Dias, deceased; Mary Dias, mother of.	do	1865	20 25		
7572	George Allender	do	1865	28 50		
7573	Samuel T. Buckley	do	1864	43 75		
7574	Daniel S. Bell	do	1863 and 1864	28 25		
7575	Justus Bronson, deceased; Lucy Bronson, widow.	do	1865	14 25		
7576	M. Hoffman, deceased; Sarah C. Hoffman, widow.	do	1865	14 75		
7577	J. T. Germon	do	1863	18 25		
7578	John M. Gaines	do	1864 and 1865	74 50		
7594	H. S. Wells, deceased; Hubbell Wells, father of.	do	1864	15 75		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
7593	Amos J. Virjason	Commutation of rations to prisoners of war, prior to July 1, 1878. 14 Stat. at Large, sections 364 and 422.	1863	$28 00		
7620	Francillo Crego	do	1863	49 25		
7623	Michael Dunn	do	1863	24 00		
7624	Jack Darwin, deceased; Hamley Darwin, father of.	do	1865	62 75		
7695	Samuel D. Chase	do	1864 and 1865	80 00		
7697	Ben. Bricher, deceased; Catherine Bricher, mother of.	do	1865	43 25		
7698	Joseph E. Boynton, deceased; Silas Boynton, father of.	do	1864 and 1865	47 00		
7699	J. W. Aiken, deceased; Martha Aiken, mother of.	do	1862 and 1863	32 50		
7700	Eli B. Clemson	do	1862 and 1863	9 25		
7701	Patrick Cusack	do	1862 and 1863	7 75		
7702	Richard Darnstædt	do	1863	1 25		
7703	Thomas Dulligan	do	1864 and 1865	53 75		
7704	S. W. Green, deceased; Martha Green, mother of.	do	1864	22 75		
7705	A. W. Hazewell, deceased; Abby A. Hazewell, mother of.	do	1864 and 1865	17 50		
7706	John Haas	do	1862 and 1863	13 25		
7707	Martin Hotchkiss	do	1862 and 1863	9 50		
7708	William F. Haines, deceased; Jane Haines, mother of.	do	1865	35 75		
7709	Frederick Hainsey	do	1865	22 50		
7710	James H. Jenkins	do	1863	9 50		
7711	W. H. Kirkpatrick, deceased; Jane Kirkpatrick, mother of.	do	1864 and 1865	67 00		
7712	Clarington Kirkpatrick, deceased; Jane Kirkpatrick, mother of.	do	1865	26 75		
7713	Joseph A. Morrow, deceased; Elizabeth Morrow, mother of.	do	1864	15 25		
7714	Joseph Miers, deceased; Fanny Miers, widow of.	do	1864 and 1865	32 50		

7715	Joseph D. Myers	do	1864	21 50
7716	David Myers, deceased; Adam and Mattie Myers, parents of.	do	1864 and 1865	59 00
7717	Edward McAllister, deceased; Mary McAllister, widow.	do	1864 and 1865	34 25
7718	Robert E. McDonald	do	1864	8 25
7719	David O'Brien	do	1863 and 1864	2 00
7720	Peter Rakes	do	1863	31 50
7721	John Reisinger, deceased; Elizabeth Reisinger, mother of.	do	1864 and 1865	39 75
7722	Tilton C. Reynolds	do	1862 and 1863	26 50
7723	John C. Irwin, deceased; Mary A. Shephard, mother of.	do	1864 and 1865	73 50
7724	L. H. Webster, deceased; Enos Webster, father of.	do	1864	44 75
7725	John Carnell	do	1862 and 1863	10 00
7763	John M. Fulkineer	do	1863	18 25
7764	Charles M. Blair	do	1863	1 25
7765	John Butler	do	1863	20 75
7766	Luther J. Bunker	do	1862 and 1863	6 75
7767	Rodger Kennedy	do	1862 and 1863	19 00
7768	William Kissner	do	1862 and 1863	5 00
7769	Peter Divet, deceased; Susan Divet, widow.	do	1865	34 25
7770	W. P. McClain	do	1864 and 1865	118 75
7771	Orlo C. Mathews	do	1865	47 00
7818	Simon D. Long	do	1863	6 75
7819	David D. Lappy, deceased; Sarah P. Lappy, widow.	do	1864 and 1865	69 50
7820	George W. Phifer	do	1864 and 1865	50 25
7821	John Probst, father of John Probst, deceased.	do	1864 and 1865	93 00
7822	Fletcher B. Pennock	do	1865	75 25
7823	Robert Parks	do	1864 and 1865	55 25
7828	John Langton	do	1864	7 50
7833	George W. Anderson, deceased; Sarah A. Anderson, widow.	do	1864	49 25
7834	Jeptha B. Stevens, deceased; Lucy A. Cox, daughter of.	do	1865	13 37
7835	Martin Cunningham	do	1865	62 75
7836	Hardin G. Dugger	do	1863 and 1864	5 50
7837	John F. Davidson	do	1863	6 50
7838	Theodore Drake, deceased; Mary Drake, widow.	do	1862 and 1863	19 00
7839	J. A. Erskine, deceased; Joseph C. Erskine, father of.	do	1865	18 75
7878	Michael White	do	1865	17 75
7879	John Wallace	do	1864 and 1865	107 00
7880	Oliver Woodbridge	do	1865	6 25
7881	Alonzo T. Waln	do	1863 and 1864	10 50
7882	Charles H. West, deceased; Mary West, mother of.	do	1864 and 1865	35 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
7883	James S. Throop	Commutation of rations to prisoners of war, prior to July 1, 1878. 14 Stat. at Large, sections 364 and 422.	1865	$14 75		
7884	Peter Thornton	do	1863	6 50		
7885	George W. Stephens	do	1865	14 75		
7886	Jefferson Sevier	do	1863	18 75		
7887	John S. Smith	do	1864 and 1865	96 50		
7888	Henry A. Skinner	do	1862 and 1863	7 25		
7889	William S. Smith	do	1864	43 75		
7890	Minert Shippen	do	1862 and 1863	49 25		
7891	W. H. Carr, deceased; Drusilla Smith, mother of.	do	1864 and 1865	55 25		
7892	John Sullivan	do	1864 and 1865	36 00		
7893	Alvin L. Smith	do	1865	58 00		
7894	George W. Stewart	do	1862 and 1863	26 75		
7895	W. H Snow	do	1865	49 25		
7896	W. H. Shank, deceased; Senarah Shank, widow of.	do	1863	29 25		
7897	Barnard F. Sheridan	do	1864 and 1865	6 25		
7898	Carriel C. Riggins	do	1864 and 1865	131 50		
7899	Isaac Rice, deceased; Elizabeth Rice, mother of.	do	1864 and 1865	38 75		
7900	Nathan R. Raynor	do	1864 and 1865	103 75		
7901	James W. Rhodes	do	1863	99 50		
7902	John Ramsdell	do	1865	9 00		
7903	John Randall, deceased; Margaret Randall, widow of.	do	1863	26 50		
7904	Ira C. Parker	do	1865	10 25		
7905	Joseph S. Perry	do	1865	10 00		
7906	Jacob Morrow, deceased; Mary Morrow, mother of.	do	1865	16 75		
7907	JohnMann	do	1862 and 1863	19 00		
7908	Moses Nevill, deceased; heirs of	do	1865	62 75		
7909	William McGuire	do	1863	30 00		
7910	Joseph Leach	do	1862 and 1863	10 00		
7911	Cyrus H. Kirkpatrick	do	1864 and 1865	21 25		

7912	William Jarrett	do	1862 and 1863	9 25
7913	Elisha Jones, deceased; Deborah Jones, mother of.	do	1862 and 1863	49 25
7914	John Johnson, deceased; Matida A. Johnson, mother of.	do	1864	17 75
7915	Benjamin F. Harrington	do	1863	4 75
7916	Marion Hubbard	do	1865	33 50
7917	Edgar V. Hamlin	do	1864	64 25
7918	John C. Green	do	1862 and 1863	19 00
7919	Cyrus Forker	do	1863	10 25
7920	Alexander D. Chany	do	1864	7 75
7921	John Buchannon	do	1864	21 00
7922	Caleb Arnett	do	1863	7 25
7961	Thomas Patton, deceased; James and Catharine Patton, parents of.	do	1864 and 1865	39 25
7962	Columbus Jessup, deceased; Timothy and Mahala Jane Jessup, parents of.	do	1865	45 25
9228	John Redmond	do	1862	79 25
9290	Charles S. Sabin, deceased; Merritt Sabin, father of.	do	1863	9 00
9293	Hiram J. Huntoon	do	1862 and 1863	20 25
9294	Lyman W. Williams	do	1863 and 1864	9 25
9300	Robert Booker, deceased; Rosa Booker, widow of.	do	1865	61 75
9327	Samuel Ray	do	1864	22 50
9328	William Abbott	do	1864	22 25
9329	Oliver Charlton, deceased; Charity Charlton, widow of.	do	1865	67 00
9330	Martin Carr	do	1862 and 1863	28 00
9331	David Layton	do	1864 and 1865	17 00
9332	Edward Parrett	do	1862 and 1863	28 00
9333	David H. Davies	do	1863	10 50
9334	C. A. Leaks	do	1863	4 00
9335	Hasard Osborn	do	1863	4 00
9336	Henry R. Osborn	do	1863	4 00
9337	Andrew McNurlen; William and Wilomine McNurlen, parents of.	do	1865	37 00
9338	Jesse Wing	do	1863 and 1864	8 25
9339	Patrick Dorgan, deceased; Julia Dorgan, widow of.	do	1865	25 25
9340	Asahel F. Ham	do	1863	9 00
9341	John Marshall	do	1864 and 1865	77 00
9342	Jay H. Tower, deceased; John H. Tower, father of.	do	1863	4 00
9343	John H. Beatty	do	1862 and 1863	19 75
9363	Peter Moore, deceased; Lucinda Moore, mother of.	do	1864	29 25
9364	William Smith, deceased; Mary Ann Smith, widow of.	do	1865	37 75
9388	Henry P. Farmer	do	1864	7 25
9391	Sanford Limpus	do	1863	10 25
9426	Jacob Cooper	do	1865	39 25

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
9427	Edward Gross	Commutation of rations to prisoners of war, prior to July 1, 1878. 14 Stats. at Large, sections 364 and 422.	1865	$23 75		
9428	Nelson Irvin	do	1865	67 00		
9429	Thomas Murray	do	1864 and 1865	26 50		
9430	Charles W. Halstead	do	1863 and 1864	38 50		
9431	Ben. McDonald	do	1865	58 25		
9432	Marcus Jones, deceased; James H. Jones, father of.	do	1864	29 00		
9433	Robert Brown	do	1865	55 75		
9434	William A. Hicks	do	1864 and 1865	21 25		
9435	Samuel A. Tweed	do	1863	6 75		
9436	Isaac Dippery	do	1863	3 00		
9437	Asa Dye	do	1863 and 1864	8 75		
9438	David Johnson	do	1865	67 00		
9439	J. P. Baker	do	1862 and 1863	61 25		
9440	Robert Snowden	do	1863 and 1864	12 25		
9470	Byron Richmond, deceased; Gilbert and Sarah Richmond, parents of.	do	1864 and 1865	81 25		
9471	Alex. King, deceased; James and Elizabeth King, parents of.	do	1864	33 00		
9472	Webber S. Seavey	do	1865	8 00		
9473	Edmund Stott	do	1864	13 25		
9474	Jacob Wable	do	1863	3 50		
9475	Alfred A. Tracy, deceased; Henry M. and Elizabeth Tracy, parents of.	do	1864 and 1865	40 50		
9476	John Aten	do	1864 and 1865	133 00		
9477	Ezra T. Speirs	do	1864	12 25		
9478	John P. Johnson	do	1864 and 1865	59 75		
9479	William Walker	do	1864	2 25		
9480	Alexander Julen	do	1865	62 50		
9481	William Haraway	do	1865	55 75		
9482	Hartwell Watkins, deceased; Henry Watkins, son of.	do	1865	22 75		
9523	Frank Ross	do	1864	15 25		
9524	Ezekiel F. Roe	do	1864	44 00		

9525	John Oglesby, deceased; Jennie E. and Albert G. Oglesby, brother and sister.	do	1864	47 75
9526	Jaques W. J. Noble	do	1862 and 1863	5 75
9527	William Gillett	do	1863	3 25
9528	Dwight Collins	do	1865	37 00
9529	Frank Collins	do	1862 and 1863	19 75
9530	Cornelius Babcock	do	1865	7 50
9583	Peter Donahue	do	1865	13 25
9509	Richmond Watkins	do	1865 and 1866	81 25
9510	Thomas F. Wilson	do	1865	43 25
9511	William Woodcock	do	1862 and 1863	9 00
9512	Elbridge G. Van Dyke	do	1863	7 75
9513	Leonard Scott, deceased; Rebecca Scott, widow of.	do	1865	47 25
9514	John A. Sharp	do	1862 and 1863	7 75
9515	Solomon Stone	do	1863	7 75
9516	Albert Stevens	do	1865	20 50
9517	Caleb B. Pelton	do	1862 and 1863	19 00
9518	James J. McConnell	do	1863	10 00
9519	Charles D. McKay	do	1863	2 50
9520	Samuel Hollis	do	1865	46 75
9521	Rezin Brown	do	1863	2 25
9522	James Brebner	do	1863	13 75
9611	James Tate, deceased; John and Nancy Tate, parents of.	do	1865	29 50
9617	William B. Carey, deceased; George B. Carey, only child.	do	1864 and 1865	73 50
9618	William Myers	do	1863	3 25
9619	Philander Kechum	do	1862	12 00
9620	Casper Kissell	do	1865	7 50
9621	Samuel Long	do	1863	3 50
9622	Samuel W. Irvine	do	1864 and 1865	82 25
9623	Samuel Claucherty	do	1862 and 1863	26 50
9625	Charles C. Davis, deceased; Seth and Eliza C. Davis, parents of.	do	1863 and 1864	61 50
9626	Harry Duncan	do	1862 and 1863	30 00
9624	Charles F. Wood	do	1863	6 25
9645	James W. Corey, deceased; Anthony and Almira Corey, parents of.	do	1863 and 1864	146 75
9646	Charles C. Chipman	do	1863	3 00
9647	Enoch South	do	1863	3 00
9648	Edward A. Collver	do	1863	5 50
9649	Asa Berry	do	1862 and 1863	9 50
9650	Franklin Blackledge	do	1864	17 25
9667	Nelson A. Pelton, deceased; Amanda C. Pelton, widow of.	do	1864	35 25
9668	Charles H. Robbins	do	1863	3 25
9669	Samuel F. Wallace	do	1864	17 25
9670	John M. Buckley	do	1865	5 25
9671	James W. Stevens	do	1864	30 50
9672	Valentine P. Rollins	do	1862	56 25
9673	George W. Ford	do	1863	63 25

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
9674	Newton Birney, deceased; Henry and Lusany Birney, parents of.	Commutation of rations to prisoners of war, prior to July 1, 1878. 14 Stats. at Large, sections 364 and 422.	1864 and 1865..	$45 25		
9675	Jackson Winer, deceased; Sarah J. Winer, widow of.	do	1864 and 1865..	35 50		
9676	David Cover	do	1864 and 1865..	24 75		
9677	Henry Gottwalt, deceased; Mary Gottwalt, widow of.	do	1864 and 1865..	13 00		
9678	Hermon Baldwin	do	1863	14 50		
9679	Lawrence Conley	do	1863 and 1864..	26 50		
9680	Thomas Williams	do	1864 and 1865..	114 75		
9681	James L. Kennedy, deceased; Rebecca Kennedy, widow of.	do	1864 and 1865..	32 75		
9682	George Washington	do	1862 and 1863..	28 00		
9683	Albert M. Newton, deceased; John Newton, father of.	do	1864 and 1865..	91 25		
9684	Theodore Fowler	do	1862 and 1863..	10 25		
9701	Samuel W. Fowler, deceased; William and Nancy Fowler, parents of.	do	1863	2 75		
9804	George Baumeister	do	1863	8 75		
9805	James Davidson	do	1862 and 1863..	9 25		
9806	Thomas Fleming	do	1862	84 00		
9807	Michael Gorman	do	1864	64 00		
9808	James A. Heady	do	1864	14 50		
9809	Thomas Hardy	do	1863	6 75		
9810	Emanuel Kissinger, deceased; Jones and Rebecca Kissinger, parents of.	do	1864 and 1865..	42 50		
9811	Wilson H. Miller	do	1863	6 50		
9812	James W. Mattingly, deceased; John and Sally Mattingly, parents of.	do	1864	56 25		
9813	William C. Means	do	1863 and 1864..	12 25		
9814	Joseph M. Peters	do	1862 and 1863..	5 00		
9815	Levi B. Miller, deceased; Margaret Pickering, guardian of minor child.	do	1864 and 1865..	25 75		
9816	William R. Rodgers, deceased; Laura L. Rodgers, widow of.	do	1865	44 50		

9817	Daniel T. Smouse	do	1862 and 1863	10 00
9818	Patrick Sullivan	do	1863	3 00
9821	John B. White	do	1862 and 1863	28 50
9822	James Walker	do	1862 and 1863	6 50
9824	James H. Robinson	do	1862 and 1863	8 75
9825	David K. Rankin	do	1863	8 75
9826	Mary Ohr, mother of Adam Ohr, deceased	do	1864 and 1865	66 25
9828	Nelson Y. Mattis, deceased; Michael Mattis, father of.	do	1864 and 1865	41 00
9829	Henry Koble	do	1864	45 75
9830	Robert A. Hillman	do	1863	30 25
9831	George Hardin, deceased; Catharine Hardin, widow of.	do	1864 and 1865	38 75
9832	Nelson Goodrich	do	1863 and 1864	4 50
9835	Jeremiah Cain	do	1863	5 25
9836	Thomas Baker	do	1862 and 1863	26 50
9837	Caroline Bram, widow of Leopold Bram, deceased.	do	1864 and 1865	37 50
9839	Samuel A. Shanabarger	do	1863 and 1864	9 00
9840	William H. H. Sandy	do	1863	3 75
9841	John F. Starcher	do	1864	23 50
9842	Calvin Meeker	do	1865	12 50
9843	Levi Longenour	do	1862 and 1863	26 00
9844	John Lesley	do	1865	47 50
9846	Thomas Horn, deceased; Mary Horn, mother of.	do	1864 and 1865	38 50
9847	Thomas Brannon	do	1863 and 1864	10 00
9858	Henry Whetzel	do	1864 and 1865	29 00
9857	John W. Whittington	do	1863	32 75
9873	Benjamin T. Shewbrook	do	1864	40 00
9874	Joseph Rice, deceased; Sarah Rice, mother of.	do	1864 and 1865	35 00
9875	James S. Minton	do	1864	47 25
9876	James W. Ludwick, deceased; Milla Ludwick, mother of.	do	1864	56 00
9878	Henry Heiller	do	1864 and 1865	49 50
9879	Walter Besemer	do	1865	52 00
9880	Elijah Boldman, deceased; Ellen Boldman, widow.	do	1862 and 1863	23 00
9881	Eri Anderson	do	1863	33 00
9892	George Weaver	do	1864 and 1865	6 50
9894	Elijah Adams	do	1865	66 75
9895	Michael Lawler	do	1864	14 75
9896	Samuel Arnold	do	1862 and 1863	56 75
9897	Thomas Weightman	do	1865	28 00
9898	William Smith	do	1863 and 1864	14 75
9899	Abraham Sheets	do	1865	10 25
9900	James W. Null	do	1863	7 50
9901	Joseph Gilbert	do	1865	2 75
9902	Charles S. Evans	do	1865	52 25
9903	Harrison Connor	do	1862 and 1863	8 75
9904	William B. Nichols, deceased; heirs of	do	1864 and 1865	93 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
9970	Franklin J. Butler, deceased; Drucilla Butler, mother of.	Commutation of rations to prisoners of war, prior to July 1, 1878. (14 Stat. at Large, sections 364 and 422.)	1864 and 1865..	$48 00		
9971	Harvey Brown, deceased; Samuel Brown, father of.	do	1864 and 1865..	44 75		
9976	James R. Bradley	do	1864 and 1865..	93 50		
9977	Julius Berndt	do	1863	5 25		
9978	Peter Bittner	do	1863	6 75		
9979	James P. Clark, deceased; John R. and Keziah Clark, parents of.	do	1864 and 1865..	39 25		
9990	William P. Rogers	do	1864	32 25		
9991	Andrew Lockwood	do	1863	3 25		
9992	John O. Brien	do	1862 and 1863..	10 00		
61	Jeremiah Williams	do	1863 and 1864..	33 50		
62	Alexander Pierce	do	1865	14 75		
63	John Nebb	do	1861–'62–'63 ...	113 25		
64	Benjamin F. Kenney	do	1864 and 1865..	15 50		
65	Robert R. Honeycutt, deceased; Felissa A. Honeycutt, widow.	do	1863	16 00		
66	Benjamin F. Frost, deceased; Hannah M. Frost, widow.	do	1864 and 1865..	35 50		
67	George P. Dofler, deceased; George Dofler, father.	do	1864	33 50		
68	Riley J. Davenport, deceased; Thomas and Fanny Davenport, parents.	do	1864	39 50		
69	A. L. Chandler	do	1864	14 00		
71	John Matz	do	1863	62 50		
73	John M. Smith	do	1864 and 1865..	93 25		
74	Otis B. Smith	do	1865	40 25		
					$10, 305 87	
7390	John W. Stringer, deceased; Bluford Stringer, father of.	Pay, transportation, services, and supplies of Oregon and Washington volunteers in 1855–'56, 1871 and prior years. Act March 2, 1861.	1855–'56	67 41		
7391	John Rankin, A. Bush, assignee	do	1855–'56	200 00		

7392	Samuel Ritchie, Edwin Chamberlain, assignee.	do	1855–'56	472 50
7393	George Rogers, Caunnaur & Co., holders and owners.	do	1855–'56	129 50
7394	Frederick H. Pratt	do	1855–'56	125 42
7395	William J. Matthews, A. Bush, assignee	do	1855–'56	569 33
7396	Solomon Fenton, C. G. McLeran, assignee.	do	1855–'56	40 00
7397	Wallace Cushman, Wallace Cushman, holder and owner.	do	1855–'56	498 33
7397	John McCoy	do	1855–'56	126 21
7397	Samuel W. Henderson	do	1855–'56	23 96
7398	David C. Bruce	do	1855–'56	144 18
7399	M. D. Ballard, C. O. Barnes, assignee	do	1855–'56	21 25
7399	E. H. Griffin, C. O. Barnes, assignee	do	1855–'56	55 34
7399	Nathaniel Gilmore, Ladd & Bush, assignees.	do	1855–'56	200 00
7400	Alonzo Ames, C. O. Barnes, assignee	do	1855–'56	32 06
9315	James A. Burk	do	1855–'56	80 40
9316	Peter Bourdignon	do	1855–'56	130 00
9316	Nicholas G. Bird	do	1855–'56	18 12
9317	W. T. Crosbie	do	1855–'56	91 47
9318	Benjamin Cox	do	1855–'56	68 55
9319	Henry Isley	do	1855–'56	50 75
9320	Cyrus C. Lewis	do	1855–'56	34 25
9321	Lewis Powell	do	1855–'56	74 66
9322	Frank G. Scarborough	do	1855–'56	50 22
9323	Alexander R. Stoughton, John D. Dement, assignee.	do	1855–'56	200 00
9324	John H. Triuman	do	1855–'56	98 00
9652	John or Jean Chevalear, deceased, Andrew Jumel, administrator.	do	1855–'56	28 64
9653	A. M. Belt, James D. McCurdy, assignee	do	1855–'56	125 00
9654	Delos Jefferson	do	1855–'56	240 00
9655	Thomas Roome	do	1855–'56	8 00
9656	Nathan Simpson to J. Callaghan, administrator of Mary O'Reilly, insane widow of B. O'Reilly, deceased, assignee.	do	1855–'56	230 73
9657	Peter Berdino, John Huntley, assignee	do	1855–'56	88 00
9657	Louis Berdino, John Huntley, assignee	do	1855–'56	42 58
9861	J. H. Lines, Charles O. Barnes, assignee	do	1855–'56	62 50
9861	William Milhollen, Charles O. Barnes, assignee.	do	1855–'56	140 00
9861	M. H. Bell, Charles O. Barnes, assignee	do	1855–'56	95 67
9861	Robert Baldwin, Charles O. Barnes assignee.	do	1855–'56	29 00
9861	Thomas Martin, Charles O. Barnes, assignee.	do	1855–'56	31 25
9862	David J. Chambers	do	1855–'56	15 86
9862	Edmund Sylvester	do	1855–'56	45 10
9862	Henry L. Yesler	do	1855–'56	98 84
9863	Caleb G. Cooper	do	1855–'56	50 52

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
9864	John Dunn, deceased, James Reynolds, administrator.	Pay, transportation, services, and supplies of Oregon and Washington volunteers in 1855–56, 1871 and prior years. Act March 2, 1861.	1855-'56	$224 00		
9864	Samuel Johnson	do	1855–'56	508 33		
9865	John Garry, Samuel McCaw, assignee	do	1855–'56	37 80		
9866	Andrew J. Thomas	do	1855–'56	24 43		
9868	Reuben P. Boise	do	1855–'56	66 67		
9959	Pembroke Gault	do	1855–'56	160 00		
9959	Francis M. Crow, deceased, Harriet S. Crow, mother.	do	1855–'56	7 25		
9959	Allen Evans	do	1855–'56	172 18		
9960	Samuel Coad, A. Bush, assignee	do	1855–'56	30 00		
9960	John B. Furguson, A. Bush, assignee	do	1855–'56	12 50		
9960	C. C. Crouer, A. Bush, assignee	do	1855–'56	85 33		
9960	Isaac S. Swearingen, deceased, A. Bush, assignee.	do	1855–'56	16 67		
9960	Stephen Taylor, deceased, A. Bush, assignee.	do	1855–'56	236 00		
9961	Joseph Cushman	do	1855–'56	96 67		
9961	L. D. Phillips	do	1855–'56	117 60		
9961	George L. Wunch	do	1855–'56	81 50		
9961	Frederick A. Clarke	do	1855–'56	148 00		
					$6, 958 53	
7977	Will A. Coulter, late lieutentant United States Army.	Transportation of officers and their baggage, 1871 and prior years. (Revised Statutes, section 1133.)	1870		62 70	
9235	E. L. Bonner & Co	Clothing and equipage, Rev. Stat., sec. 1133.	1878		67 00	
7030	Franklin M. Jordan	Horses and other property lost in the military service prior to July 1, 1878. (Sections 3482–3489 Revised Statutes.)	1864	148 99		
7028	Samuel W. Hawkins	do	1862	150 00		
7035	Frederick W. Wenzel	do	1864	75 00		
7033	James Dial	do	1863	122 43		
7032	Philip M. Slaughter	do	1861	100 00		
7031	William McClelland, administrator of estate of Thomas G. McClelland, deceased.	do	1862	157 78		

7037	Squier J. Waller	do	1862	130 00
7040	James H. Poe	do	1862	70 00
7039	James H. Marshall	do	1862	69 44
7038	Jeremiah A. Todd	do	1863	153 68
7045	Charles Markham, administrator of estate of Aaron J. Markham, deceased.	do	1862	144 50
7044	Sarah Angle, administratrix of estate of George Angle, deceased.	do	1864	150 00
7042	Frank A. Little	do	1863	150 00
7046	John Rogers	do	1863	125 00
7043	N. B. Critchfield	do	1864	90 00
7041	Shuler S. Vroonan	do	1864	195 00
7047	William Merriwether	do	1862	125 00
7049	Robert H. Hodshier	do	1863	80 00
7048	Levander Sykes	do	1864	156 68
7052	Isaac Keen, administrator of estate of James T. Keen, deceased.	do	1864	102 93
7053	Daniel McDonald	do	1863	162 00
7055	Edward Fletcher	do	1863	75 00
7057	William H. Doner	do	1863	147 25
7054	James S. Anderson	do	1863	90 00
7056	Albert H. Brown	do	1864	175 00
7058	Joel B. Fisk	do	1864	150 00
7127	Nathan Norris	do	1862	70 00
7128	George W. Milton	do	1864	131 43
7129	James M. McGill	do	1864	200 00
7132	Henrietta Murray, late widow of Cornelius Taylor, deceased.	do	1862	135 00
7133	George W. Nichols	do	1864	105 00
7130	Susan E. Scoville, late widow of Emmett Goss, deceased.	do	1862	130 18
7131	W. Scott Belden	do	1862	200 00
7136	Refine W. Twitchell	do	1865	150 00
7135	James M. Bloom	do	1862	130 00
7140	Charles R. Kymes	do	1864	75 00
7139	Norvel M. Dickerson	do	1863	75 00
7137	John Call	do	1862	115 00
7152	George W. Spencer	do	1863	200 00
7155	Jannet Watts, administratrix of estate of James H. Watts, deceased.	do	1864	150 00
7153	George W. Kirk	do	1864	80 00
7154	J. A. Burton	do	1862	133 18
7159	Mary Skeels, widow, and Cora M. Wicks, daughter, of George Skeels, deceased.	do	1865	185 00
7160	do	do	1865	180 00
7157	William C. Webb	do	1864	130 00
7158	Andrew J. Johnson	do	1861	105 00
7156	Lewis H. Whiteman	do	1865	200 00
7161	William H. Burke	do	1864	200 00
7163	Mrs. Priscilla Thompson *et al.*, next of kin to James Anderson, deceased.	do	1862	125 00
7167	George M. Ramsay	do	1864	185 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
7172	George E. Jennings	Horses and other property lost in the military service prior to July 1, 1878. (Sections 3482–3489 Revised Statutes.)	1864	$140 00		
7168	Charles L. Pratt	do	1864	200 00		
7169	do	do	1864	85 00		
7173	Isaac W. Robertson	do	1863	90 00		
7176	Sterling T. Brewer	do	1863	125 00		
7175	do	do	1864	125 00		
7174	do	do	1864	128 10		
7171	William Smith	do	1864	167 06		
7170	do	do	1863	112 06		
7252	George W. Meade	do	1862	60 00		
7254	Andrew J. Vaughan	do	1864	90 00		
7253	Ancil B. Spencer	do	1864	100 00		
7256	Anson H. Hobart	do	1864	199 64		
7257	Dr. F. Kittrell	do	1863	156 25		
7255	John Austin, father of Eliott Austin, deceased.	do	1861	108 68		
7259	Isaac Essex, father of Alfred Essex, deceased.	do	1863	110 00		
7263	Austin Richmond	do	1862	153 75		
7262	James A. Masterson	do	1863	130 50		
7261	W. W. Murray	do	1864	148 50		
7260	William W. Long	do	1864	140 00		
7277	Elizabeth Dwyer, administratrix of estate of Thomas Dwyer, deceased.	do	1862	75 00		
7278	Edward P. Follett	do	1864	125 00		
7275	Edward Arbuckle	do	1864	200 00		
7280	Otis P. Rice	do	1865	200 00		
7279	Robert J. Moore	do	1864	135 00		
7282	Francis M. Winckler	do	1863	75 00		
7281	George A. Shaw	do	1863	139 00		
7276	William Dale, jr	do	1863	125 00		
7274	Harrison Asher	do	1863	80 00		
7283	Rodney Foos	do	1864	175 00		
7287	James McCann	do	1862	125 00		

7286	Elizabeth J. Howard	do		1862	68 00	
7288	John A. Rose	do		1864	200 00	
7289	Benjamin Snow	do		1863	158 50	
7284	Turner W. Bottom	do		1862	176 28	
7293	Edwin Wellington	do		1862	99 43	
7292	David C. Smith	do		1864	171 62	
7297	Zachariah E. Thomas	do		1864	145 00	
7295	John A. Burke	do		1863	44 00	
7313	Adolph Metzner	do		1863	165 00	
7290	Henry C. Dunn	do		1863	162 78	
7291	do	do		1863	125 00	
7312	George A. Lemert	do		1864	100 00	
7316	Nicholas H. Griffith	do		1862	85 00	
7321	Orlando Offutt	do		1863	120 00	
7320	Patrick Montgomery	do		1863	90 00	
7318	James W. Morgan	do		1864	200 00	
7319	do	do		1864	100 00	
7314	Henry C. Bailey	do		1864	110 00	
7315	Jacob A. Cozad	do		1862	100 00	
7317	Thomas J. Gallagher	do		1864	121 18	
7327	John K. Terry	do		1863	45 00	
7328	William J. Wiggs	do		1864	140 00	
7325	Sandy Lowe	do		1862	125 00	
7322	Edwin D. Comstock	do		1864	175 00	
7326	Cecelia McManaman, mother of Thomas J. McManaman, deceased.	do		1865	157 00	
7323	Hugh Key	do		1864	150 00	
7324	do	do		1864	165 00	
7331	J. W. Kearns	do		1864	125 71	
7332	William H. Beck, executor of will of Christian Beck, deceased.	do		1862	150 00	
7333	Elizabeth B. Strong, executrix of will of E. A. Strong, deceased.	do		1863	174 78	
7329	W. F. Hutchinson	do		1862	200 00	
7338	Eli Hughes	do		1862	200 00	
7334	Nathan Arnold	do		1862	70 00	
7342	Frank White	do		1864	122 50	
7340	Levi Lay	do		1863	100 00	
7589	John A. Payne	do		1864	200 00	
7590	do	do		1863	150 00	
7335	C. H. Blakely	do		1862	174 88	
7336	Lewis J. Blair	do		1864	125 00	
7341	Dr. Norman Teal	do		1863	100 00	
7339	Paris C. Johnston	do		1864	155 00	
7337	Thomas C. Harris	do		1863	45 00	
7343	Hudson M. Barnes	do		1847	75 00	..... Mexican war.
7344	Andrew Vanderpool, administrator of estate of William M. Gibson, deceased.	do		1861	110 00	
7345	John D. Rawlings	do		1863	75 00	
7387	Nancy Smith and William A. Withers, committee of Lewis Smith, lunatic.	do		1861	125 00	
7374	John B. Auxier	do		1862	121 18	

Amounts allowed by the accounting officers of the Treasurg Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
7385	Virgil H. Lyon	Horses and other property lost in the military service prior to July 1, 1878. (Sections 3482–3489 Revised Statutes.)	1864	$160 00		
7388	Wilmer H. Welton	do	1864	125 00		
7383	William Kuck, father of H. W. Kuck, deceased.	do	1863	100 00		
7375	Lawrence Becker	do	1864	109 60		
7382	Francis M. Hunter	do	1863	75 00		
7381	do	do	1863	110 00		
7386	Schanzeman Severns	do	1864	50 00		
7376	John W. Broswell	do	1862	57 00		
7377	Samuel K. Cross	do	1862	130 00		
7379	James W. Harris	do	1864	175 00		
7380	do	do	1864	177 66		
7457	James Blythe	do	1864	95 00		
7458	Henry Plumb	do	1864	120 00		
7459	do	do	1865	151 85		
7461	Robert S. Hattel	do	1864	85 00		
7460	Stephen Crouse	do	1861	95 00		
7463	Nehemiah Warren	do	1863	125 00		
7462	R. P. Chambers, guardian of minor heirs of Joel W. Chambers.	do	1862	147 78		
7464	Joseph A. Eppstein	do	1848	60 00	.....	Mexican war.
7465	Lafayette Irvin	do	1863	80 00		
7466	J. M. Pinckley and J. G. Belew, administrators of estate of Clark Pinckley, deceased.	do	1862	104 50		
7469	Robert D. Watts	do	1865	127 03		
7467	Erasmus Tracy	do	1862	100 00		
7468	do	do	1862	110 00		
7505	Thomas J. Waisner	do	1864	145 00		
7509	John K. Kennedy	do	1848	55 00	.....	Mexican war.
7506	Henry Grother	do	1863	70 00		
7510	Robert B. Moore	do	1863	145 25		
7512	Merimoth O. Teeple	do	1864	193 00		
7507	Allen Gentry	do	1863	112 03		

7508	Alemeron L. Jewell	do	1862	112 40		
7513	Ischam Hall	do	1862	124 78		
7515	John A. Patton	do	1863	100 00		
7516	William R. Callen	do	1863	75 00		
7517	James F. Morton	do	1846	65 00		Mexican war.
7518	do	do	1847	160 00		
7521	Henry M. Knowles	do	1863	135 00		
7522	Walter R. Robbins	do	1864	200 00		
7523	Charles E. Waters	do	1863	127 00		
7519	William J. Bise	do	1862	125 50		
7520	William P. Gibbs	do	1864	21 18		
7524	Aaron Adams	do	1862	125 00		
7525	William G. Hurt	do	1865	169 18		
7529	Joseph H. Sinex	do	1868	80 85		
7527	William A. McMinn	do	1864	125 00		
7528	Mark Poore	do	1863	65 00		
7526	Simeon M. Davis	do	1863	125 00		
7535	Samuel B. Merry	do	1865	200 00		
7536	Carl Curdt	do	1863	172 78		
7541	Isaac M. Wetmore	do	1861	150 00		
7538	William G. Lindza	do	1863	122 78		
7537	Benjamin F. Josling	do	1865	151 90		
7539	Morgan T. Williams	do	1863	186 81		
7540	do	do	1863	125 00		
7542	David Mefford	do	1864	172 78		
7543	do	do	1864	140 00		
7544	Marion G. De Benneville, widow of Jas. S. De Benneville, deceased.	do	1862	150 43		
7592	Charles L. Carter	do	1863	125 00		
7593	do	do	1863	172 50		
7611	James T. Kirk	do	1862	125 00		
7612	Levi Willis	do	1863	70 00		
7613	do	do	1863	110 00		
7615	Thomas W. Dickey, administrator of estate of Hiram Johnson, deceased.	do	1863	150 00		
7616	Wesley T. Smith	do	1865	200 00		
7614	Sebastian Brengart	do	1863	115 00		
7631	John W. Graham	do	1862	125 00		
7629	William Dale, sr	do	1862	125 00		
7628	Dietrich Ballman	do	1864	65 00		
7630	Elam S. Freeman, father of and heir of William H. Freeman.	do	1863	155 00		
7632	Joseph W. Skelton	do	1865	160 00		
7634	H. D. Patton	do	1862	150 00		
7633	John H. Crowder	do	1863	110 00		
7635	Josephine De C. Thomas, widow, &c., of Evan Thomas, deceased.	do	1864	200 00		
7641	Henry F. Miller	do	1863	100 00		
7636	Lewis Clark	do	1864	138 18		
7637	Jesse Davis	do	1865	130 00		
7638	do	do	1864	172 78		
7642	William S. McIntyre	do	1862	135 00		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
7639	James R. Keeney	Horses and other property lost in the military service prior to July 1, 1878. (Sections 3482–3489, Revised Statutes.)	1862	$169 18		
7640	do	do	1863	125 00		
7647	James Lord	do	1863	95 00		
7644	Charles M. Ferrell	do	1862	200 00		
7643	do	do	1862	135 00		
7646	James Gipson	do	1865	135 00		
7645	Thomas A. Gregg	do	1864	86 18		
7649	Jeremiah Everley	do	1862	125 00		
7648	Samuel Clark	do	1863	100 00		
7650	August H. Tiernan	do	1862	150 00		
7651	Lewis W. Boren	do	1863	133 18		
7652	do	do	1864	161 28		
7656	George Myers	do	1862	125 00		
7658	Philip Watkins	do	1863	26 00		
7659	do	do	1864	85 00		
7655	Anthony L. Carrick	do	1864	149 25		
7657	Joseph Polite	do	1862	158 99		
7669	Thomas Brawner, administrator of William H. Brawner, deceased.	do	1863	200 00		
7670	J. C. Baker	do	1863	125 00		
7671	Sydney T. Ford	do	1863	72 40		
7672	Ephraim P. Teter	do	1862	80 00		
7673	Louis A. Allor	do	1864	130 00		
7676	Henry L. Knight	do	1847	40 00	.....	
7677	do	do	1848	50 00	.....	Mexican war.
7746	Ferdinand N. Tuck	do	1864	154 00		Do.
7758	Chancey G. Phelps	do	1862	95 00		
7754	William O. Bowen	do	1863	100 00		
7755	James H. Cowan	do	1862	125 00		
7757	Daniel Earnest	do	1864	147 78		
7756	Archibald Dunn, guardian of children of George Huff, deceased.	do	1864	120 18		
7749	William Osborn	do	1862	60 00		
7748	Matthew Clegg	do	1864	150 00		
7747	do	do	1863	18 18		

7751	William C. King	....do	1863	135 00
7752	Albert R. Lincoln	....do	1864	200 00
7753	Minerva Stockstill, widow of Thomas Stockstill, deceased.	....do	1862	151 78
7791	Edward Larkey	....do	1863	125 00
7788	Robert L. Crain	....do	1863	90 00
7796	Merit C. Welsh	....do	1865	150 00
7792	James M. Onion	....do	1864	125 00
7789	Otto Funke	....do	1862	165 00
7795	Jesse Stewart	....do	1864	40 00
7794	George W. Pigg	....do	1864	107 00
7793	Edgar A. Proctor	....do	1862	100 43
7787	Elijah Crotts	....do	1864	140 00
7786	....do	....do	1864	135 00
7790	Alexander D. Hamilton	....do	1864	175 00
7802	W. R. Mattison	....do	1862	150 00
7804	D. A. Peloubet	....do	1863	150 00
7799	F. J. Goldsmith	....do	1864	120 00
7798	Martha A. Eaton and Victoria B. Howe, heirs of W. L. Carter, deceased.	....do	1863	115 00
7797	William Baskins	....do	1864	150 00
7800	James W. Y. Hughert	....do	1862	100 00
7800	....do	....do	1863	150 00
7803	Norval Osborn	....do	1865	200 00
7809	Mary Ann Nelson, mother of Thomas H. Easley.	....do	1861	125 00
7805	Joseph T. Bradley	....do	1864	127 06
7806	....do	....do	1863	100 00
7808	Sophia Clybourn, administratrix of estate of John H. Clybourn, deceased.	....do	1862	200 00
7807	John S. Bowles	....do	1864	156 33
7814	Charles Strawn	....do	1862	150 00
7810	Jonathan R. Miles	....do	1863	150 00
7811	....do	....do	1863	100 00
7812	....do	....do	1864	100 00
7813	John A. Phillips	....do	1863	140 00
7816	James D. Madden	....do	1864	50 00
7817	Mary C. Stephenson, widow of Alexander C. Stephenson, deceased.	....do	1864	125 00
7815	Enoch A. Dean	....do	1861	120 00
7846	David J. McAlpin	....do	1861	161 43
7925	Thomas Jefferson Clark, administrator of estate of D. C. Clark, deceased.	....do	1865	150 00
7928	Christian Mead	....do	1864	85 00
7927	Irvine C. Inks	....do	1864	100 00
7930	Rebecca Farris, widow of Patton Colley, deceased.	....do	1864	121 00
7993	David R. Haggard	....do	1862	195 00
8056	John B. Alsup	....do	1863	190 00
7992	David L. Thompson	....do	1862	80 00
8062	Keziah Wunder, late widow of M. E. Cowee, deceased.	....do	1862	90 00

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
8060	John H. McRorey	Horses and other property lost in the military service prior to July 1, 1878. (Sections 3482–3489 Revised Statutes.)	1863	$65 00		
8058	Sabra A. Johnson, mother of James N. Johnson, deceased.	do	1864	80 00		
8059	Jasper N. Robinson	do	1862	130 00		
8057	James C. Bacon	do	1864	150 00		
8061	John W. Stephens	do	1863	125 00		
8063	George W. Williamson	do	1862	60 00		
8064	James B. Steidley, father of John W. Steidley, deceased.	do	1862	120 00		
8161	Christopher Reed	do	1862	86 00		
8162	Herman Kronke	do	1862	75 00		
8618	James Fulton	do	1862	150 00		
8620	James M. Hopper	do	1863	55 00		
8619	John Gordon	do	1864	100 00		
8625	Ira O. Hurt	do	1864	90 00		
8621	Esther Chase, administratrix of estate of Sumner Chase, deceased.	do	1864	176 53		
8629	William E. F. Wells	do	1863	125 00		
8630	Nathan Wills	do	1862	130 00		
8627	Jeremiah Paul	do	1862	136 18		
8624	Robert Eskew	do	1861	125 00		
8623	Frank W. Dillion	do	1862	200 00		
8622	do	do	1863	150 00		
8626	E. S. Merriott	do	1864	80 00		
8628	Christopher Seitter	do	1864	100 00		
8631	George W. Scobee	do	1862	60 00		
8633	Theobold Z. Picker	do	1862	70 00		
8632	Charles Holtzinger	do	1863	115 00		
8634	Nimrod P. Bradley	do	1861	75 00		
8635	Peter S. Leonard	do	1864	166 50		
8636	Marion Holderman	do	1864	148 18		
8666	Samuel J. Sprague	do	1864	140 00		
8667	Reuben P. Kercheval	do	1864	115 00		
9156	Allen Vincent	do	1864	125 00		

9159	John A. Conley	do	1864	60 00
9151	William Yater	do	1864	80 00
9150	John G. Shawbell	do	1863	100 00
8670	Robert Beggs	do	1862	138 00
8669	Jason Burrow	do	1862	100 00
9148	James Price	do	1863	125 00
9149	William T. Phillips	do	1863	115 00
9155	do	do	1863	110 00
8668	Thomas Bradley	do	1862	126 25
9157	Cicero Scobey	do	1862	145 00
9158	Alfred M. Hutchison	do	1862	85 00
9152	Henry C. Foster	do	1862	90 00
9153	do	do	1864	100 00
9154	Albert McKnight	do	1863	164 58
9245	Francis M. Willis	do	1862	100 00
9247	Shesh B. Richardson	do	1864	150 00
9246	Beriah Wilber	do	1864	200 00
9244	Levi Wilcox	do	1862	125 00
9243	Joseph Hillis	do	1862	125 00
9242	John W. Pattee	do	1864	147 71
9262	Arthur Ray	do	1862	140 00
9260	James Z. Perrin	do	1863	87 08
9257	Aaron W. Phillips	do	1863	110 00
9258	Samuel Van Osdel	do	1865	150 00
9261	William W. Carter	do	1864	100 00
9259	William P. Burgess	do	1863	100 00
9269	Lorenz Stempel	do	1862	85 00
9267	Gurdon E. Beates	do	1864	110 00
9266	Zadok C. Delashmutt	do	1864	90 00
9268	Tarlton T. Bradshaw	do	1862	150 87
9279	Charles McMillan	do	1862	110 00
9278	do	do	1863	100 00
9280	Nathan J. Freeman	do	1863	140 00
9281	Delphi Fever	do	1862	136 00
9295	Rodolph M. Lamson	do	1864	140 00
9296	William H. Stewart	do	1864	50 00
9297	Stephen D. Sloan	do	1864	111 50
9351	James H. Lynch	do	1862	125 00
9353	Andrew J. Waggoner	do	1863	155 00
9352	William Neal, father of Hiram E. Neal, deceased.	do	1862	100 00
9356	Sylvester W. Munn	do	1862	175 00
9354	Benjamin F. Johnson	do	1862	102 78
9355	do	do	1863	102 00
9368	Eli W. Williams	do	1863	80 00
9366	Daniel Garrison	do	1864	65 00
9365	B. F. Branson	do	1863	85 00
9371	James O'Connor	do	1864	149 00
9372	Manis Vannaken	do	1862	103 68
9377	Stephen S. Yoho	do	1863	89 75
9376	Albert H. Wells	do	1861	132 06
9374	John E. Mills	do	1863	181 10

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
9373	Charles H. Craig	Horses and other property lost in the military service prior to July 1, 1878. (Sections 3482-3489 Revised Statutes.)	1862	$77 00		
9379	James B. Young	do	1863	90 00		
9380	do	do	1864	100 00		
9383	John C. Rose	do	1863	151 33		
9382	do	do	1863	149 08		
9381	Ira Dunham, administrator of estate of Erskine T. Dunham.	do	1862	125 85		
9395	William Munsill	do	1863	150 00		
9394	Sandy Adams	do	1864	100 00		
9396	Allen S. Copeland	do	1863	105 00		
9397	Thomas Merrill	do	1863	115 00		
9398	Edwin J. Salsbury	do	1863	110 50		
9399	do	do	1864	125 00		
9400	Albert C. Wedge	do	1863	150 00		
9410	Berthold Hahn	do	1863	150 00		
9616	Joseph N. Murphy	do	1864	127 06		
9417	Emaline Burges and J. M. Boyd, legal representatives of Cicero Tiner, deceased.	do	1864	80 00		
9423	J. H. Tompkins, public administrator of estate of James Wright, deceased.	do	1863	100 00		
9422	Emandus A. Masters	do	1862	148 18		
9421	William Penton	do	1862	75 00		
9562	J. C. Files	do	1856	300 00		
9546	Sands C. Stewart	do	1863	70 00		
9547	do	do	1864	100 00		
9550	Lyna Whitledge	do	1863	131 83		
9549	Joseph Campbell	do	1864	65 00		
9548	Almon M. Wiley	do	1864	145 00		
9551	Lafayette M. Tash	do	1862	102 27		
9556	Benjamin Harry	do	1862	125 00		
9553	Nicholas M. Watson	do	1864	163 48		
8554	Abijah Wilder	do	1863	72 50		
9555	Henry P. Morris	do	1863	90 00		

9557	Charles E. Moore	do	1861	200 00		
9558	Sarah J. Kanady, administratrix of estate of John P. White, deceased.	do	1862	135 00		
9559	Asher C. Taylor	do	1865	150 00		
9560	James Burgess	do	1864	200 00		
9563	William Lyle	do	1856	158 00	.....	Oregon war.
9567	Isaac Vanbeber	do	1861	123 18		
9568	George W. Dillon	do	1863	127 08		
9569	John G. Van Voast	do	1864	130 00		
9570	Francis E. Whitner	do	1864	140 00		
9571	John D. Williamson	do	1862	100 00		
9596	William Lewis, father of Michel Lewis, deceased.	do	1862	112 06		
9597	Henry Stokes	do	1863	122 78		
9599	George Bozarth	do	1863	140 00		
9598	Albert H. Austin	do	1862	60 00		
9602	Alex. Carman	do	1863	127 10		
9600	Frank Brown	do	1863	127 99		
9601	do	do	1863	131 62		
9603	John H. Dunlap	do	1862	120 00		
9605	Alexander M. Pratt	do	1863	112 00		
9604	do	do	1864	112 00		
9606	Alonzo E. Hughes, father of Alonzo E. Hughes, deceased.	do	1864	100 00		
9706	James W. Bowman	do	1864	125 90		
9707	Reuben A. White, administrator of estate of William A. Griffin, deceased.	do	1864	149 81		
9891	William Weightman	do	1864	95 00		
9887	Jared M. Drake	do	1862	130 00		
9888	Charles J. Johnson	do	1862	142 00		
9803	C. Carroll Tevis	do	1863	200 00		
9913	H. D. Leverett	do	1847	60 00	.....	Mexican war.
9914	do	do	1848	75 00	.....	Do.
9915	James Irby	do	1864	120 00		
9918	Frederick Doll, father of Elias Doll, deceased.	do	1863	135 00		
9919	Charles F. Allen	do	1863	150 00		
9916	John L. Holloway	do	1864	125 00		
9917	Marquis De Lafayette Green	do	1864	140 00		
9920	Jane R. Reed, mother of William A. Reed, deceased.	do	1862	150 67		
9921	Oliver H. P. Cox	do	1861	139 50		
9923	Martha J. Antwiler, late widow of Francis M. Proctor, deceased.	do	1863	62 00		
9926	Rachel F. Hart	do	1865	160 00		
9925	Lewis N. Gibson	do	1864	100 00		
9928	Robert F. Kidd	do	1864	100 00		
9929	Andrew Moles	do	1863	75 00		
9927	Mahlon Haworth, father of M. F. Haworth, deceased.	do	1863	145 00		
9930	W. A. Robinson	do	1865	190 00		
9932	Henry D. Mullins	do	1862	65 00		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
9933	Samuel C. Means	Horses and other property lost in the military service prior to July 1, 1878. (Sections 3482–3489 Revised Statutes.)	1863	$200 00		
9931	Charles T. Kelsey	do	1865	140 00		
9934	James H. Phelps	do	1864	147 18		
9935	Harriet Westfall	do	1864	280 00		
9950	James Smith	do	1856	150 00		Oregon war.
9945	Henry Fiene	do	1863	57 40		
9955	Francis M. Ward	do	1862	101 78		
9942	Jacob J. James	do	1864	87 00		
9952	William Snider	do	1863	177 06		
9951	do	do	1864	157 06		
9940	James W. Bowman, for heirs of Jonathan Bowman, deceased.	do	1862	152 23		
9948	John Peterson	do	1863	130 00		
9936	Martha E. Callthorp, administratrix of W. P. King, deceased.	do	1864	200 00		
9944	Martha E. Callthorp, administratrix of estate of W. P. King, deceased.	do	1864	200 00		
9941	Zadok C. Delashmutt	do	1864	115 00		
9937	J. B. Duke, administrator of estate of M. Renfro, deceased.	do	1864	151 46		
9946	Thomas Gray	do	1863	75 00		
9939	Elijah Arnold	do	1862	75 00		
9938	Samuel J. Dillon	do	1863	125 00		
9943	Stephen E. Mills	do	1863	75 00		
9953	E. J. Shackelford	do	1863	110 00		
9947	Marietta Johns, administratrix of estate of P. A. Johns, deceased.	do	1862	135 00		
9954	Merit C. Welsh	do	1864	130 00		
9924	Marion E. Enos, widow of Albert G. Enos, deceased.	do	1862	200 00		
9956	George O. Williams	do	1863	200 00		
9957	Nancy Cantrell, widow of John Cantrell, deceased.	do	1864	90 00		
3860	Dulaney R. Carr	do	1863	27 16		

9958	Elias Webb	do	1863	135 00		
34	Adolphus B. Johnson	do	1862	125 00		
35	James A. Robertson	do	1864	91 51		
33	David W. Boring	do	1864	153 00		
32	James A. Davis	do	1864	105 00		
36	Jeremiah V. Clark	do	1862	80 00		
37	Richard M. Ragsdale	do	1862	127 00		
38	Harmon B. Leonard	do	1863	100 00		
40	Andrew Hackett	do	1862	150 18		
41	Lucretia E. Wright, late widow of Oscar Moore, deceased.	do	1862	110 00		
42	do	do	1864	120 00		
43	Edwin Wellington	do	1864	148 43		
45	George W. Salsman.	do	1862	125 00		
46	do	do	1863	100 00		
47	do	do	1863	125 00		
48	J. H. Tompkins, public administrator of estate of James Wright, deceased.	do	1863	155 85		
50	Nathan C. Pritchett	do	1864	175 03		
49	C. V. Jacobs	do	1864	157 68		
51	William E. Waterman	do	1862	75 00		
52	do	do	1862	100 00		
53	Sandusky Bruton	do	1863	110 00		
54	Randell E. McCormick, father of John W. McCormick, deceased.	do	1864	125 00		
55	Samuel Perchall	do	1862	20 43		
57	Solomon Deputy	do	1863	96 43		
56	Mary E. Bryan, late widow of R. C. Wright, deceased.	do	1864	200 00		
58	David S. Thomas	do	1862	101 50		
59	Frank C. Brown	do	1864	200 00		
60	do	do	1864	190 00		
					61, 880 00	
7626	Thomas Gorman	Horses and other property lost in military service prior to July 1, 1878; lost vessels (Revised Statutes, sections 3482, 3483, 3484, 3485, 3486, 3487, and 3488, act March 3, 1849).	1862	800 00		
9801	Joseph Eichelberger	do	1863	400 00		
44	Gaff, Cochran & Co., for barge Wabash No. 1.	do	1865	4, 100 00		
					5, 300 00	

NOTE.—The claim of George T. Wright, administrator of the estate of John T. Wright, deceased, for value of steamer Peerless ($35,000), lost at sea November 4, 1861, allowed by the Third Auditor and Second Comptroller under the appropriation for property lost in the military service, was presented to Congress last session in H. Ex. Doc. No. 29, Forty-sixth Congress, second session, page 82, but no provision was made for its payment.

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE THIRD AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	WAR DEPARTMENT—Continued.					
	CLAIMS—Continued.					
7663	State of Kansas	Refunding to States expenses incurred in raising volunteers (act July 27, 1861).		$26,604 05		
9308	State of New York	do		21,421 13		
					$48 025 18	

RECAPITULATION OF WAR DEPARTMENT CLAIMS ALLOWED BY THIRD AUDITOR AND SECOND COMPTROLLER.

Army transportation, 1878 and prior years	$42,759 27
Regular supplies, Quartermaster's Department, 1878 and prior years	8,859 52
Incidental expenses, Quartermaster's Department, 1878 and prior years	8,165 30
Barracks and quarters, 1878 and prior years	15,603 64
Horses for cavalry and artillery, 1878 and prior years	3,566 00
Subsistence of the Army, 1878 and prior years	2,212 44
Commutation of rations to prisoners of war in rebel States, prior to July 1, 1878	10,305 87
Pay, transportation, services, and supplies of Oregon and Washington volunteers in 1855 and 1856; 1871 and prior years	6,958 53
Transportation of officers and their baggage, 1871 and prior years	62 70
Clothing, camp and garrison equipage, 1878 and prior years	67 00
Horses and other property lost in the military service, prior to July 1, 1878	67,180 00
Refunding to States expenses incurred in raising volunteers	48,025 18
Total	213,765 45

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE FOURTH AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	NAVY DEPARTMENT.					
	CLAIMS.					
261	Thomas L. Mooney, *alias* Thomas Money	Pay of the Navy, prior to July 1, 1878	1861	$88 00		
198	John M. Chase	do	1862	8 17		
4397	Lucy Merritt, widow of John Merritt, deceased.	do	1862	8 32		
4378	Angeline Hutchinson, sister and heir of Joseph Lothrope, deceased.	do	1862	26 77		
4378	Eliza Ann Williams, sister and heir of Joseph Lothrope, deceased.	do	1862	26 77		
4359	Karen W. Wathne, widow and administratrix of the estate of Cornelius Wathne, *alias* Cornelius Whitney.	do	1862	173 96		
4365	Mary Ann Dewvant, widow of George B. Dewvant, and administratrix of his estate.	do	1862	60 97		
105	Thomas J. Knipe	do	1863	36 98		
198	John M. Chase	do	1863	22 50		
4110	Jesse R. Prindle, father and heir of Chancey Prindle, deceased.	do	1863	13 74		
4364	Harriett Williams, widow of Isaac H. Williams, deceased, and administratrix of his estate.	do	1863	141 46		
4372	John Lewis	do	1863	12 30		
24	Samuel McMahon	do	1864	39 33		
4375	William Harkness, administrator of the estate of James H. Earle, deceased.	do	1864	214 66		
4332	Lina Moseley, sister and heir of Nelson Jones, deceased.	do	1864	60 15		
4330	Cornelius A. Howard and Lydia S. Thorp, brother and sister of Charles W. Howard, deceased.	do	1864	6 90		
4367	Christopher Folkherth, father and heir of Henry Folkherth, deceased.	do	1864	34 64		
4368	John H. Bennett and James W. Fenton, administrators of the estate of Alonzo Bennett, deceased.	do	1864	46 98		
24	Samuel McMahon	do	1865	25 82		
118	John W. Gardner	do	1865	182 22		
87	Julius A. Kaiser	do	1865	80 83		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE FOURTH AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	NAVY DEPARTMENT—Continued.					
	CLAIMS—Continued.					
4396	R. D. Doyle, administrator of the estate of Charles Speight (or Spates), deceased.	Pay of the Navy, prior to July 1, 1878	1865	$222 66		
4366	Solomon Lowrey and Frederick Lowrey, brothers and heirs of Andrew Lowrey, deceased.	do	1865	26 88		
4375	William Harkness, administrator of the estate of James H. Earle, deceased.	do	1865	32 44		
4331	William J. Montgomery, nephew of Ambrose M. Barry, deceased, and administrator of his estate.	do	1865	11 42		
100	Henry Perry	do	1865	22 98		
81	Asa Anderson	do	1866	69 09		
126	Alfred Rich	do	1866	2 80		
87	Julius A. Kaiser	do	1866	56 98		
128	Travers H. Dade	do	1866	70 00		
4331	William J. Montgomery, nephew of Ambrose M. Barry, deceased, and administrator of his estate.	do	1866	16 10		
4370	Abraham Powell, administrator of the estate of John Adams, deceased.	do	1867	122 34		
4334	Tabitha Hays, mother of John Hays and administratrix of his estate.	do	1867	123 53		
91	Benjamin Atwood	do	1870	58 12		
296	A. McCone	do	1873	8 80		
4388	Dennis Connor, father and heir of David J. Connor, deceased.	do	1874	37 33		
231	Tobias Stanley	do	1874	150 68		
282	Daniel C. Burleigh	do	1875	18 08		
215	George W. Wadleigh	do	1875	36 16		
82	W. H. Jaques	do	1875	36 16		
107	R. L. Phythian	do	1875	45 21		
124	George W. De Long	do	1875	36 16		
4333	Henry Wilder Allen, brother of William N. Allen, and administrator of his estate.	do	1875	57 49		
4369	John Rooney, brother and heir of Mitchell J. Rooney, deceased.	do	1876	98 16		

282	Daniel C. Burleigh	....do	1876	68 50	
215	George W. Wadleigh	....do	1876	136 98	
82	W. H. Jaques	....do	1876	136 98	
107	R. L. Phythian	....do	1876	171 24	
124	George W. De Long	....do	1876	108 49	
4355	Mary Burton, sister and heir of Frederick P. Vining, deceased.	....do	1877	27 14	
4355	Emily Lippiatt, for the benefit of the brother and sister of Frederick P. Vining, deceased.	....do	1877	54 28	
4355	Emily Lippiatt and Ellen Simmons, sisters and heirs of Frederick P. Vining, deceased.	....do	1877	54 27	
322	George R. Brush	....do	1877	645 49	
130	Henry Glass	....do	1877	169 87	
282	Daniel C. Burleigh	....do	1877	102 20	
215	George W. Wadleigh	....do	1877	74 53	
277	William Boyd	....do	1877	9 86	
82	W. H. Jaques	....do	1877	204 95	
108	R. C. Thompson	....do	1877	46 03	
107	R. L. Phythian	....do	1877	256 16	
124	George W. De Long	....do	1877	132 61	
329	J. C. Burnett	....do	1877	74 79	
4407	James McGreevy, legatee of William Simpson, deceased.	....do	1877	104 16	
4405	Lydia A. McCollum, mother and administratrix of the estate of Frank McCollum, deceased.	....do	1877	90 21	
227	John H. Clark	....do	1878	272 05	
324	Walter A. McClurg	....do	1878	111 23	
240	J. M. Hogg	....do	1878	181 36	
276	David C. Woodrow	....do	1878	362 71	
241	Edward Hughes	....do	1878	109 31	
230	John B. Collins	....do	1878	40 28	
328	S. W. Battle	....do	1878	96 99	
130	Henry Glass	....do	1878	136 99	
329	J. C. Burnett	....do	1878	102 74	
282	Daniel C. Burleigh	....do	1878	70 95	
82	W. H. Jaques	....do	1878	73 42	
235	A. K. Hughes	....do	1878	832 87	
4407	James McGreevy, legatee of William Simpson, deceased.	....do	1878	13 61	
172	Frank C. Dale	....do	1878	102 74	
4405	Lydia A. McCollum, mother of Frank McCollum, deceased, and administratrix of his estate.	....do	1878	76 24	
					$7,923 27
4363	John W. De Krafft, son of Frederick W. De Krafft, deceased, and administrator of his estate.	Pay of the Marine Corps, prior to July 1, 1878.	1855	144 37	
4387	Margaret Benedict, sister of Alexander Doonan, deceased, and administratrix of his estate.	....do	1859	163 91	

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE FOURTH AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	NAVY DEPARTMENT—Continued.					
	CLAIMS—Continued.					
4362	Eliza Sovereen, mother and heir of E. R. Sovereen, *alias* William H. Fenton, deceased.	Pay of the Marine Corps, prior to July 1, 1878.	1866	$5 10		
10	Edward Quigley	do	1867	4 27		
10	do	do	1868	9 60		
221	John McCarthy	do	1868	10 93		
221	do	do	1869	10 40		
267	William A. Merrick	do	1871	14 13		
132	J. F. Heddinger	do	1873	36 00		
132	do	do	1874	22 20		
49	John F. Elms	do	1874	12 00		
43	Henry G. Ellsworth	do	1875	66 11		
49	John F. Elms	do	1875	23 07		
324	Alexander K. Buck	do	1876	9 17		
49	John F. Elms	do	1876	37 25		
110	H. Clay Fisher	do	1877	52 50		
49	John F. Elms	do	1877	36 00		
324	Alexander K. Buck	do	1877	24 00		
99	William Dugan	do	1877	12 00		
110	H. Clay Fisher	do	1878	26 26		
49	John F. Elms	do	1878	24 83		
324	Alexander K. Buck	do	1878	24 00		
99	William Dugan	do	1878	19 00		
					$787 10	
4403	Union Pacific Railroad	Contingent of the Marine Corps, 1878 and prior years.	1875	38		
4403	do	do	1876	2 10		
4188	do	do	1876	37		
4403	do	do	1877	65 76		
4403	do	do	1878	80 44		
					149 05	
102	Henry O. Gusley	Provisions of the Marine Corps	1864	74 00		
102	do	do	1865	60 50		
					134 50	
145	Rodney B. Cooke	Bounty to seamen	1864	54 00		Allowed under joint resolution of Congress of February 24, 1864.
214	Ambrose B. Caswell	do	1864	54 00	.....	
127	Nelson Reed	do	1864	42 00		

298	Joseph Sechleman	do	1865	33 34		
192	John Hall	do	1865	33 34		
104	George Kimmel	do	1865	33 34		
237	Thomas Wetherall	do	1865	33 34		
143	Elihu Chadwick	do	1865	35 00		
242	John Burns	do	1865	100 00		
187	Loren Stroup	do	1865	33 34		
28	John H. French	do	1865	33 34		
70	Robert F. Alexander	do	1865	33 34		
244	Peter J. Butler	do	1865	33 33		
167	Frederick Cummings	do	1865	33 34		
109	William Little	do	1865	33 33		
154	Leonard Winter	do	1865	66 66		
72	David W. Jones	do	1865	33 34		
143	James A. Davis	do	1865	33 34		
258	Frederick Server	do	1865	33 34		
120	W. D. Lamson	do	1865	9 72		
272	Samuel R. Worth	do	1865	300 00		
83	Stephen Atherton	do	1865	33 34		
241	James Weaver	do	1865	33 34		
136	Joseph Roberts	do	1865	33 34	.....	Allowed under act of July 1, 1864.
289	Handy Beard	do	1865	33 34		
312	James H. Bogue	do	1865	33 34		
109	Augustus Taylor	do	1865	66 67		
33	Wesley Onderkirk	do	1865	66 67		
173	Alphonso L. Cushway	do	1865	33 34		
105	George S. Farrar	do	1865	33 34		
201	Frank McMahon	do	1865	100 00		
86	Francis A. Taylor	do	1865	33 34		
177	Russell Carlew	do	1865	33 34		
198	Elijah Stevens	do	1865	33 34		
96	Daniel D. Persons	do	1865	33 34		
14	Louis Yeager, *alias* Louis Jeager	do	1865	33 34		
92	Henry G. Tillinghast	do	1865	100 00		
234	Calvin Manuel	do	1865	100 00		
108	Joshua Lee	do	1865	33 33		
242	William McDonald	do	1865	33 33		
48	Peter H. Nellis, *alias* Peter Nellis	do	1865	33 34		
139	William W. Field	do	1865	33 34		
232	Adalbert Ward	do	1865	33 34		
181	William C. Wright	do	1865	35 00		
110	Daniel G. George, *alias* William Smith	do	1866	290 00	.....	Allowed under joint resolution of January 13, 1864.
145	Peter Holland	do	1866	33 00	.....	Allowed under act of March 3, 1863.
127	John A. Hall	do	1866	75 00	.....	Allowed under act of July 11, 1862.
4358	Eliza Smith, mother of Theophilus Giles, deceased.	do	1866	300 00	.....	Allowed under joint resolution of Congress of January 13, 1864, and act of March 3, 1873.
4371	Jacob Carroll	do	1866	300 00		
					$3,127 88	
4396	R. D. Doyle, administrator of the estate of Charles Speight, or Spates.	Bounty for destruction of enemy's vessels	1865	1 50		
84988	John Berlinger	do	1865	90 80		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE FOURTH AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	NAVY DEPARTMENT—Continued. CLAIMS—Continued.					
85006	William Burton	Bounty for destruction of enemy's vessels.	1865	$14 11		
85115	James Barren	do	1865	11 08		
85034	Belle Belden, administratrix of William Thomas, deceased.	do	1865	54 50		
84977	Melzer T. Dyer	do	1865	1 92		
85062	Michael Dunn	do	1865	8 41		
85013	Mary Ann Dewvent, widow and administratrix of George B. Dewvent, deceased.	do	1865	13 52		
84933	William H. Elliott	do	1865	37 55		
84963	Charles A. French	do	1865	144 28		
85004	Augustus H. Hartman	do	1865	72 98		
85029	Samuel Hoffman	do	1865	1 92		
85104	Edwin B. Harwood, father of Robert Harwood, deceased.	do	1865	4 07		
85102	Edwin B. Harwood, father of Eli Harwood, deceased.	do	1865	3 52		
85118	Mary Jane Knight, widow and administratrix of Joseph Davis, deceased.	do	1865	9 31		
85026	Charles Knight	do	1865	3 69		
84999	Dominick Lavin	do	1865	8 10		
84982	John T. Miller	do	1865	27 70		
85015	Francis C. Martin, brother and administrator of John Martin, deceased.	do	1865	19 71		
85019	Eli Moore	do	1865	2 95		
85024	James Cumisky	do	1865	9 57		
85064	William Malley	do	1865	8 40		
85088	Jeremiah McKnew	do	1865	38 59		
85009	Duncan McPherson	do	1865	14 30		
84975	James Maloney	do	1865	37 75		
84937	Thomas Mulvaney	do	1865	37 55		
85076	William J. Montgomery, administrator of Ambrose Barry, deceased.	do	1865	2 11		
85131	Lucy Merritt, widow and administratrix of John Merritt, deceased.	do	1865	10 02		
85048	Price Owens	do	1865	9 39		
85039	Stephen R. Pierce, father of Edward B. Pierce, deceased.	do	1865	9 60		

84967	Martha Robinson, sister of William Robinson, deceased.	....do	1865	18 77		
85053	Nathan Reed	....do	1865	30 36		
84984	Philip Schenck	....do	1865	80 09		
85036	Daniel Smith	....do	1865	37 17		
85136	Jeffrey Sullivan	....do	1865	7 89		
84961	George Taylor	....do	1865	6 83		
85106	Peter Welsh	....do	1865	42 18		
84950	Thomas J. Woodward	....do	1865	144 28		
85094	Harriet Williams, widow and administratrix of Isaac H. Williams, deceased.	....do	1865	17 17		
84944	Martha White, widow and administratrix of Peter White, deceased.	....do	1865	9 31		
85042	Jane White, widow and administratrix of Moses E. Boyd, deceased.	....do	1865	17 44		
					$1,120 39	
277	John H. Welsh	Indemnity for clothing lost		125 00		Allowed under section 290, Rev. Stats.
76	E. V. Tyson	....do	1862	60 00		Allowed under act of April 6, 1866.
208	Thomas Mulvaney	....do	1863	50 00		Allowed under joint resolution of Congress of February 13, 1863.
133	James Reiley	....do	1863	50 00		
111	Horatio M. Green	....do	1864	60 00		
100	Henry Perry	....do	1865	48 00		
295	Howard S. Stephenson	....do	1865	60 00		
184	William W. West	....do	1865	60 00		
4396	Charity Speight, widow of Charles Speight, or Spates.	....do	1865	60 00		Allowed under section 288, Rev. Stats.
4353	Fannie L. Barney, widow of M. L. R. Barney.	....do	1865	60 00		
185	Joseph B. West	....do	1866	60 00		
4370	Abraham Powell, administrator of the estate of John Adams, deceased.	....do	1867	76 50		For clothing destroyed to prevent the spread of disease, allowed under decisions of the Navy Department, dated July 12, 1842, and October 14, 1849.
262	Christopher Stevens	....do	1869	60 00		Allowed under section 288, Rev. Stats.
150	Charles Wagner	....do	1871	40 00		Do.
211	Samuel Ward	....do	1872	60 00		Allowed under decisions of Navy Department of July 12, 1842, and October 14, 1849.
31	Timothy O'Reiley	....do	1875	60 00		Allowed under section 288, Rev. Stats.
4405	Lydia A. McCollum, mother of Frank McCollum, deceased.	....do		60 00		Do.
					1,049 50	
4375	William Harkness, administrator of the estate of James H. Earle, deceased.	Provisions of the Navy, 1878 and prior years	1864	37 25		
4375	....do	....do	1865	8 00		
290	Morris Sullivan	....do	1865	19 50		
282	Daniel C. Burleigh	....do	1875	9 90		
215	George W. Wadleigh	....do	1875	9 90		
82	W. H. Jaques	....do	1875	9 90		
107	R. L. Phythian	....do	1875	9 90		
124	George W. Delong	....do	1875	9 90		

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE FOURTH AUDITOR AND SECOND COMPTROLLER, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	NAVY DEPARTMENT—Continued. CLAIMS—Continued.					
282	Daniel C. Burleigh	Provisions of the Navy, 1878 and prior years	1876	$37 50		
215	George W. Wadleigh	do	1876	37 50		
82	W. H. Jaques	do	1876	37 50		
107	R. L. Phythian	do	1876	37 50		
124	George W. De Long	do	1876	29 70		
282	Daniel C. Burleigh	do	1877	62 10		
215	George W. Wadleigh	do	1877	20 40		
277	William Boyd	do	1877	5 40		
82	W. H. Jaques	do	1877	56 10		
107	R. L. Phythian	do	1877	56 10		
124	George W. De Long	do	1877	36 30		
130	Henry Glass	do	1877	19 20		
329	J. C. Burnett	do	1877	27 30		
142	H. M. Griffiths	do	1878	58 50		
302	J. C. Spalding	do	1878	54 30		
227	John H. Clark	do	1878	99 30		
324	Walter A. McClurg	do	1878	60 90		
240	J. M. Hogg	do	1878	99 30		
276	David C. Woodrow	do	1878	99 30		
241	Edward Hughes	do	1878	39 90		
230	John B. Collins	do	1878	14 70		
328	S. W. Battle	do	1878	35 40		
130	Henry Glass	do	1878	64 80		
233	George H. Curtis	do	1878	94 50		
329	J. C. Burnett	do	1878	37 50		
147	George M. Ransom	do	1878	7 40		
282	Daniel C. Burleigh	do	1878	32 70		
82	W. H. Jaques	do	1878	20 10		
235	A. K. Hughes	do	1878	91 20		
220	James H. Chapman	do	1878	45 00		
172	Frank C. Dale	do	1878	37 50		
4405	Lydia A. McCollum, mother of Frank McCollum, deceased, and administratrix of his estate.	do	1878	44 10		
					$1,056 40	
4188	Union Pacific Railroad	Contingent, provision and clothing	1876	3 91		
4403	do	do	1877	8 32		
4403	do	do	1878	65		
					12 88	

89	Frank A. Johnson	Contingent, equipment and recruiting	1865	20 77		
215	Edward A. Humphrey	do	1865	12 75		
295	William Maleady	do	1865	97 44		
4381	William H. Phillips, guardian of the minor heirs of Joseph H. Phillips, deceased.	do	1865	71 34		
4380	Bridget Daverin, mother of John J. Daverin, deceased.	do	1865	37 68		
264	Horace N. Munroe	do	1866	12 75		
108	John Thornton *alias* Thornton Fitzhugh	do		6 87		
236	Joseph Holmes	do	1870	150 75		
4403	Union Pacific Railroad	do	1876	04		
					410 39	
4335	Esta B. Bowen, sister of James S. Foley, deceased.	Construction and repair	1875		26 00	
4403	Union Pacific Railroad	Steam machinery	1875	16		
4697*a*	Central Pacific Railroad	do	1878	36 09		
					36 25	
4403	Union Pacific Railroad	Contingent navigation	1875		44	
4188	do	Naval Observatory	1876		41	
4403	do	Maintenance yards and docks	1878		09	
4359	Karen W. Wathne, widow and administratrix of the estate of Cornelius Wathne, *alias* Cornelius Whitney, deceased.	Relief of the widows and orphans of the officers, seamen, and marines of the United States ships Cumberland and Congress.	1862		216 00	
244	Henry Williams	Gratuity to seamen	1880		100 00	Allowed under section 1407, Revised Statutes.
	Total				16,150 55	

RECAPITULATION OF NAVY DEPARTMENT CLAIMS ALLOWED BY THE FOURTH AUDITOR AND SECOND COMPTROLLER.

Pay of the Navy	$7,923 27
Pay of the Marine Corps	787 10
Contingent, Marine Corps	149 05
Provisions, Marine Corps	134 50
Bounty to seamen	3,127 88
Bounty for destruction of enemies' vessels	1,120 39
Indemnity for lost clothing	1,049 50
Provisions for the Navy, Bureau of Provisions and Clothing	1,056 40
Contingent, Bureau of Provisions and Clothing	12 88
Contingent, Bureau of Equipment and Recruiting	410 39
Construction and repair, Bureau of Construction and Repair	26 00
Steam machinery, Bureau of Steam Engineering	36 25
Contingent, Bureau of Navigation	44
Naval Observatory, Bureau of Navigation	41
Maintenance of yards and docks, Bureau of Yards and Docks	09
Widows and orphans of the lost on the Cumberland and Congress	216 00
Gratuity to seamen	100 00
Total	16,150 55

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SIXTH AUDITOR, UNDER SECTION 4, ACT OF JUNE 14, 1878.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	Fitchburg Railroad Company	Deficiency in postal revenues, 1878 and prior years.	1876	$82 20		Mail transportation from May 1, 1876, to April 30, 1878. Route No. 3072, Massachusetts.
	Do	do	1877	490 50		
	Do	do	1878	408 30		
					$981 00	
	Flushing, North Shore and Southern Railroad Company.	do	1878		74 90	Mail transportation. Route No. 6094, New York. Deduction of second quarter 1878 remitted January 24, 1880.
	Muncy Creek Railroad Company	do	1878		162 14	Mail transportation from November 15, 1877, to June 30, 1878. Route No. 8110, Pennsylvania.
	South Mountain Railway and Mining Company.	do	1878		513 54	Mail transportation from October 1, 1877, to June 30, 1878. Route No. 8052, Pennsylvania.
	Delaware and Bound Brook Railroad Company.	do	1878		1,170 80	Mail transportation from August 4, 1877, to June 30, 1878. Route No. 8103, Pennsylvania.
	McMinnville and Manchester Railroad Company.	do	1871	1,554 37		Mail transportation from July 1, 1870, to June 30, 1873. Route No. 10137 (old), Tennessee.
	Do	do	1872	1,750 00		
	Do	do	1873	1,746 50		
					5,050 87	
	Atlanta and Charlotte Air Line Railroad Company.	do	1877	78 72		Mail transportation from April 16, 1877, to June 30, 1878. Route No. 15001, Georgia.
	Do	do	1878	377 05		
					455 77	
	Lake Erie and Louisville Railroad Company.	do	1878		202 46	Mail transportation from February 1 to June 30, 1878. Route No. 21020, Ohio.
	Cincinnati and Eastern Railway Company.	do	1878		57 11	Mail transportation from April 8 to June 30, 1878. Route No. 21052, Ohio.
	Northern Pacific Railway Company	do	1878		2,996 49	Mail transportation from December 17, 1877, to June 30, 1878. Route No. 26021 (old), Minnesota.
	Chicago, Burlington and Quincy Railroad Company.	do	1877	612 00		Mail transportation from July 1, 1876, to June 30, 1878. Route No. 27005, Iowa.
	Do	do	1878	612 00		
					1,224 00	

Nashville and Northwestern Railroad Company.	....do	1868	2,216 92		Mail transportation from July 1, 1867, to June 30, 1869. Routes Nos. 10008 and 10012, Tennessee.
Do	....do	1869	258 91	2,475 83	
John H. Wilson, mail-contractor	....do	1878		44 78	Service from October 1 to November 30, 1877. Route No. 8735, Pennsylvania.
R. D. Patton, mail-contractor	....do	1877		6 58	Service from July 1, 1876, to June 30, 1877. Route No. 19114, Tennessee.
James B. Williams	....do	1871		269 02	Temporary service from July 3 to September 30, 1870. Route No. 9766, Kentucky.
George D. Wheeler	....do	1863		10 46	Temporary service from July 1 to September 12, 1862. Route No. 12510, Michigan.
James E. Dixon, mail-contractor	....do	1878		13 38	Service from October 1 to 7, 1877. Route No. 44125, Oregon.
W. W. Welsh, local mail-agent	....do	1872		103 85	For service at Meridian, Miss., from February 10 to April 12, 1872.
Alfred Sanford, proprietor of Roman Citizen, Rome, N. Y.	....do	1866		4 00	For publishing advertisements of September 21, 1865, inviting proposals for carrying the mails.
I. N. Hawkins, postmaster, Chillicothe, Ohio.	....do	1877		120 00	Amount paid mail-messenger for service from July 1, 1876, to June 30, 1877.
James H. Lloyd, postmaster, Liberty, Mo.	....do	1874	168 48		
Do	....do	1875	200 00		Clerk hire.
Do	....do	1876	200 00	568 48	
H. Hallo	....do	1876	2 00		For rent of rooms for post-office at Lincoln, Nebr., from May 1, 1876, to June 30, 1877, under lease on file in the Post Office Department.
Do	....do	1877	12 00	14 00	
R. Hawley, late postmaster, Williamsport, Pa.	....do	1877	300 00		Additional compensation from Oct. 1, 1876, to June 30, 1878, per letter of Postmaster-General, dated Dec. 11, 1880.
Do	....do	1878	400 00	700 00	
J. J. and G. F. Crittenden, mail-contractors	....do	1861	515 44		Service from April 1, 1861, to October 5, 1861. Route No. 9675, Kentucky.
Do	....do	1862	580 53	1,095 97	
*Charles Morgan, mail-contractor	....do	1861		2,094 17	Allowance of one month's extra pay, per order of Postmaster-General, dated December 2, 1879, modifying order of May 20, 1861, discontinuing service. Route No. 8502, Texas.
*C. B. Payne, mail-contractor	....do	1861		7,500 00	Allowance of one month's extra pay, per order of Postmaster-General, dated December 2, 1879, modifying order of May 20, 1861, discontinuing service. Routes Nos. 8503 and 8504, Texas.

Amounts allowed by the accounting officers of the Treasury Department—Continued.

ALLOWED BY THE SIXTH AUDITOR, UNDER SECTION 4, ACT OF JUNE 14, 1878—Continued.

No. of settlement or claim.	Name of claimant.	Appropriation from which payable.	Fiscal year in which the expenditure was incurred.	Amount.	Total.	Remarks.
	*Memphis and New Orleans Steam Packet Company, mail-contractor.	Deficiency in postal revenues, 1878 and prior years.	1861		$3,538 59	Allowance of one month's extra pay on service discontinued May 31, 1861. Routes Nos. 8167 and 8168, Louisiana. Order of Postmaster-General, December 1, 1879.
	*Southern Steamship Company, mail-contractor.	do	1861		4,583 33	Allowance of one month's extra pay, per order of Postmaster-General, dated December 2, 1879, modifying order of May 20, 1861, discontinuing service. Route No. 8501, Texas.
	*John D. Adams, mail-contractor	do	1861		1,572 58	Allowance of one month's extra pay, per order of Postmaster-General, dated December 2, 1879, modifying order of May 20, 1861, discontinuing service. Route No. 7813, Arkansas.
	*John D. Adams, mail-contractor	do	1861		708 33	Allowance of one month's extra pay, per order of Postmaster-General, dated December 2, 1879, modifying order of May 20, 1861, discontinuing service. Route No. 7856, Arkansas.
	Pacific Mail Steamship Company	Mail steamship service between San Francisco, China, and Japan.	1877		83,333 33	For carrying the United States mails, as follows: Two round trips between San Francisco and Japan and China, one commencing November 1, 1876, and ending January 20, 1877, the other commencing December 2, 1876, and ending February 10, 1877, under original contract of October 16, 1866, and contracts supplementary thereto made under authority of acts of Congress, approved February 17, 1865, and February 18, 1867.
	Total				121,645 76	

*These six claims are based on the condition in all mail contracts "that the Postmaster-General may curtail or discontinue the service in whole or in part, he allowing one month's pay on the amount dispensed with." The amount due for service performed under each contract has been paid in full, with the exception of the last, which, with all other "ante bellum" mail service, is waiting action by Congress.—J. M. McGrew, *Auditor*.

	Amount.	Total.
SUMMARY OF CLAIMS.		
Legislative:		
Court of Claims		$34 80
State Department:		
Foreign intercourse		507 59
Treasury Department:		
Customs	$84,496 67	
Internal revenue	6,443 57	
Miscellaneous	5,271 05	
		96,211 29
War Department:		
Second Auditor's accounts—Army	251,058 84	
Third Auditor's accounts—Army	213,765 45	
		464,824 29
Navy Department:		
Fourth Auditor's accounts—Navy		16,150 55
Interior Department:		
General Land Office	26 04	
Public-lands service	198,727 21	
Indian affairs	8,650 57	
		207,403 82
Post Office Department:		
Deficiencies in postal revenues	38,312 43	
Mail steamship service between San Francisco, Japan, and China	83,333 33	
		121,645 76
Department of Justice:		
Judicial—expenses of courts		23,783 17
Total allowed claims		930,561 27

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46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. No. 31.

LLOYD'S HARBOR, N. Y.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Report of survey of the channel of Lloyd's Harbor, N. Y.

JANUARY 11, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 10, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers dated the 7th instant, and accompanying copy of report from Maj. J. W. Barlow, Corps of Engineers, upon the survey for a channel between Lloyd's Harbor and Cold Spring Bay, Long Island, N. Y., made in accordance with the provisions of the river and harbor act of June 14, 1880.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 7, 1881.

SIR: To comply with requirements of the river and harbor act of June 14, 1880, I have the honor to submit herewith a copy of a report to this office from Maj. J. W. Barlow, Corps of Engineers, of the results of a survey made under his direction, with a view to opening a channel between Lloyd's Harbor and Cold Spring Bay, Long Island, N. Y.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY WITH A VIEW TO OPENING CHANNEL BETWEEN LLOYD'S HARBOR AND COLD SPRING BAY, NEW YORK.

ENGINEER OFFICE, UNITED STATES ARMY,
New London, Conn., December 24, 1880.

GENERAL: I have the honor to submit the following report of survey for opening channel between Lloyd's Harbor and Cold Spring Bay, New York, authorized by section second of the river and harbor act approved June 14, 1880.

This work was assigned to my charge June 17, 1880, and as soon as practicable after learning something of the nature of the desired improvement I organized a field party consisting of Mr. William W. Starr, jr., assistant engineer; George K. McEwen and Oscar Darling, civil engineers, with necessary boatman to make an instrumental examination of the locality.

The object of the examination was to ascertain the amount of material necessary to be removed to create a navigable channel between the two harbors; the rise and fall of the tide in each, with a view to determining the probability of a tidal current being produced through the new channel. The work was in progress from the 6th of September until the 10th, tidal observations being afterwards continued during one-half a lunation. Owing to bad weather the soundings were not carried over as large an area as was intended, but sufficient work was accomplished upon which to base satisfactory estimates of cost.

A map showing the area examined and a copy of Coast Survey chart of the two harbors and adjoining county are sent herewith.

A statement of Mr. Oscar Darling, civil engineer, a resident of Huntington, and who assisted in the survey, accompanies this report. Mr. Darling's statement is given in full, as it is believed to embody the views of the citizens of Huntington and other towns who are interested in the accomplishment of the improvement.

The object of the proposed channel is to afford communication between New York City and the vilages of Huntington, Centreport, and Northport, by a route more direct, saving 2 miles in distance and avoiding the exposed headland and shoals now encountered in rounding Lloyd's Point.

It is also claimed that the use of Lloyd's Harbor for refuge would be increased. It is not probable, however, that this would occur to any great extent, as that harbor is now easily accessible from the eastward, and Oyster Bay affords safe anchorage for vessels seeking shelter from the westward.

Lloyd's Harbor is a shallow estuary extending from Huntington Bay westward a distance of about 3 miles, reaching to within a few rods of Oyster Bay, and nearly severing the promontory of Lloyd's Neck from the main land of Long Island.

The waters of the two bays were originally connected, and Lloyd's Neck was an island.

The action of the waves and tides have caused the opening into Oyster Bay to become closed by a firm sand beach along which a highway has been constructed leading over to the farming lands on Lloyd's Neck.

The shore on the Cold Spring side of the beach is bold and the water deep, the tide ebbing and flowing in a current parallel to it. On the opposite side is the extreme head of Lloyd's Harbor, bare at low-water for a long distance from the beach and having an average depth of but 4 feet at low-water for a distance of about 3 miles.

The improvement contemplated must consist in dredging a channel

through the sand beach, and also through Lloyd's Harbor, a greater or less distance, depending upon the depth of channel sought.

To make the channel permanent, *i. e.*, to prevent a renewal of the sand beach from the same causes which originated it, one, or perhaps two jetties will be necessary at the opening on the Cold Spring shore.

A draw-bridge, where the highway will cross the channel, will also be required.

The tidal observations indicate but a slight difference either in the rise and fall at the two harbors, or in the time of their periods. Therefore but little tidal current can be expected to aid in keeping the channel clear. Except the tendency to close the channel at the cutting through the beach by the action of the tides and waves in Cold Spring Bay, there seems to be no cause to apprehend a serious shoaling of the channel when once completed.

I have been unable to obtain positive information as to the width and depth of channel needed; but, assuming that sailing vessels of draught as great as 10 feet will be likely to use it, and that a line of steamers between New York and Huntington is contemplated, the depth should be made 10 feet at low-water, and the width not less than 200 feet, except at the crossing of the highway, where a drawbridge should be constructed leaving a clear passage-way between the abutments of 75 feet. Following are estimates of the cost of improvement for a channel 200 feet wide, and 10 feet deep at mean low-water:

DREDGING.

Amount of material necessary to be removed following the line of the natural channel, 1,049,700 cubic yards, at 20 cents	$209,940 00
(Along the most direct line the amount would be 85,500 cubic yards less.)	

DRAW-BRIDGE.

Iron bridge to turn on one of the abutments with a clear opening of 75 feet	4,000 00

ABUTMENTS AND WING-WALLS.

1,806 cubic yards of dimension stone, at $12 per yard	21,672 00
One jetty on north side of opening into Cold Spring Bay, 3,200 tons of rip-rap, at $1.25	4,000 00
Contingencies, 20 per cent	49,123 60
	288,746 60

Should the width of the channel be reduced to 100 feet, and wood substituted for iron in the construction of the bridge, the estimate could be reduced about one-third.

I am indebted to the Hon. James W. Covert for the following information and statistics relating to the village of Huntington, Long Island.

Very respectfully, your obedient servant,

J. W. BARLOW,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

COMMERCIAL STATISTICS.

FLUSHING, N. Y., *September* 7, 1880.

DEAR SIR: Inclosed I have the honor to transmit to you the result of inquiries made relative to the proposed channel between Huntington Bay and Lloyd's Harbor, Long Island.

Before commencing the survey please have your engineer call on Mr. W. H. Baldwin banker, at 66 Broadway, New York City, who can give you further information.

With great regard, &c.,

JAMES W. COVERT,
Representative First District New York.

Maj. J. W. BARLOW, *U. S. A.*

LETTER OF MR. O. L. JONES.

COLD SPRING HARBOR, LONG ISLAND,
August 30, 1880.

DEAR SIR: Your favor relating to the improvement of Lloyd's Harbor was received some time since and would have been answered before, but I have been so much engaged in New York and elsewhere that I have not had the time to devote to the subject that its importance demands. It strikes me that if a channel of sufficient width, say 400 feet, is cut through Lloyd's Harbor it cannot be other than a great success as far as vessels are concerned overtaken or threatened by storm. It will be found in the event of the improvement being made, that vessels instead of anchoring off Cow Bay on account of stress of weather, can be 20 or 30 miles nearer their destination by avoiding the outside or "sound side" of Lloyd's Neck, and take the inside route; they will then have one continuous safe harbor from Cold Spring to Eaton's Neck. From the foregoing you will see that we favor the proposed improvement, but unless it should be done in a manner so as not to injure Cold Spring we would not feel so favorably inclined toward it. The mud, silt, &c., should be excavated and disposed of either in the sound or in some locality where we will not be troubled with it again; as, for instance, a stone or crib dock might be built in the vicinity of the improvement and the excavated material deposited inside of it; the channel should be deep enough to prevent the ebb-tide from washing the mud, &c., into Cold Spring Harbor.

Inclosed please find statement on manufacturing industries, &c., at Huntington, furnished by C. R. Street, esq. I will get a list of vessels taking custom licenses at the port of Cold Spring and send them to you in a few days.

Yours, respectfully,

O. L. JONES.

STATEMENT.

Population of Huntington village, including union school district	3,000
Number of stores	30
Markets	3
Manufactures: earthenware, carriages, sash and blinds, row-locks, &c	11
Churches	8
Schools, 1 union school; attendance	500
Value of property, real and personal, on assessor's books	$2,500,000
Vessels from Huntington Harbor:	
Packets in city trade, regular	3
Vessels freighting	15
Vessels freighting, transient	20
Tons of merchandise received at port yearly	15,000
Tons of other freight received at port yearly	23,000
Tons of freight going from port yearly	25,000
Estimate of number of vessels visiting Huntington Bay and Lloyd's Harbor yearly for purpose of shelter during storms, &c	5,000

LETTER OF MAJ. J. W. BARLOW, CORPS OF ENGINEERS.

ENGINEER OFFICE, UNITED STATES ARMY,
New London, Conn., August 25, 1880.

SIR: I am just in receipt of a communication from the Hon. James W. Covert, stating that you would furnish certain statistical information bearing upon the proposed improvement of cutting a channel between Lloyd's Harbor and Cold Spring Bay, Long Island.

I beg to state that I should be glad to receive such information at your earliest con-

venience, which may be as full as you think proper, but should especially cover the following points:

1. What amount of commerce or navigation would be benefited by the proposed improvement?

2. The character of the desired improvement; *i. e.*, width and depth of channel needed.

3. The particulars, as far as possible, as to the advantages of this channel over that around Lloyd's Neck.

4. Would a draw-bridge be required where the channel would cut the present highway?

5. The number of vessels, sail and steamer, that would use this passage in preference to the usual route?

6. Are there any objections to this improvement?

Information upon these and any other points that may occur to you would be of great service in presenting an intelligent report upon the whole question of the improvement, and would be gladly received.

Very respectfully, your obedient servant,

J. W. BARLOW,
Major of Engineers.

Mr. A. H. BALDWIN.

LETTER OF MR. A. H. BALDWIN.

NEW YORK, *September* 1, 1880.

MY DEAR SIR: Absence from home has prevented an earlier reply to your favor of August 25. I can see no way of giving you the facts requested in detail, as the commerce to be benefited by the proposed improvement extends all the way along the coast to the northernmost ports of Canada.

On Monday last I counted 50 schooners, all seeking protection in our harbor from the northeasterly gale. Most, if not all, of these would have used the cut-off.

The inhabitants along the north shore of Long Island are unanimously in favor of the improvement. If you will kindly allow me to make a suggestion, I think the better way for you to procure all facts in relation to the work is to advise me when the citizens of Huntington, Northport, Centreport, and the surrounding country may meet and consult with your engineers regarding the wants and necessities of the section to be benefited.

I shall be most happy to aid you in any way in my power in procuring all details regarding the enterprise.

Very respectfully, yours,

A. H. BALDWIN.

Maj. J. W. BARLOW,
United States Engineers.

Every vessel going through the sound would at times use this channel.

STATEMENT OF MR. OSCAR DARLING, CIVIL ENGINEER, RESIDENT OF HUNTINGTON, LONG ISLAND.

The situation of Lloyd's Harbor in the southern confines of Long Island Sound, being located some 22 miles eastward from the western entrance to the sound and about the same distance westward from a central point in the sound between this harbor and the entrance to Gardiner's Bay or Peconic Bay, renders it the most convenient harbor of refuge along the whole of the sound coast of Long Island. Its absolutely land-locked condition, surrounded by high, commanding ground, containing an anchorage area of one square mile, and affording ample room for the largest fleet that would at any one time be in position, by reason of distance therefrom, to avail themselves of its protection, makes it the most secure, and would be, with the consummation of this contemplated improvement, the most accessible of any harbor on our coast.

The present means of access is a very serious obstacle in the way of its utilization by a larger proportion of vessels that are now overtaken by storms to the westward of Lloyd's Neck.

The long distance to be sailed and the dangerous point to be rounded in making the present entrance compel vessels now in the vicinity of Sand's Point to take up with harbors in every respect inferior as regard safety and general desirability.

It is conceded by all captains of vessels traveling the sound that should they be overtaken by a storm at any point in the vicinity of Sand's Point or at any point within 25 miles to the east of Eaton's Neck, Lloyd's Harbor would be made by

them if possible. To the west of Lloyd's Harbor, Hempstead Bay and Manhassett Bay are the only anchorage grounds to be found. In both cases they are open harbors, affording but slight protection. To the east of Lloyd's Harbor no other anchorage ground is to be found on the Long Island coast until Gardiner's Bay or Peconic Bay is made, the intervening distance being about 60 miles. It is no unusual occurrence to find a fleet of 150 sail riding at anchor here during seasons of storms or head winds, even with the present want of convenient access, and in times of severe or lengthy storms these figures are more than doubled.

The depth of water in the harbor is amply sufficient to meet the wants of all coasting vessels or steamers that pass through the sound.

Over quite a large area some 15 feet or more of water is found shoaling up to 9 or 10 feet over the balance of the one mile square of anchorage area afforded.

Since some 95 per cent. of the coasting trade of the sound is done within the limit of this draught of water, it is at once apparent that the contemplated improvement will reach and benefit an immense commercial interest, quite independent of any local benefits that will occur to the several harbors affected by such improvement.

A very important feature in connection with this improvement is found in the gradual shoaling of the harbor.

The present influx and efflux of tide-water having no tendency whatever to free the harbor from the gradual encroachment of and accumulation from the upland, the opening of the channel will afford positive and direct tidal currents to act upon this accumulation, having, as it does, the power and volume of a large bay at each entrance.

It is evident, then, that the opening of this channel and the consequent improvement of this harbor are directly and positively in the interest of commerce, a commerce the magnitude of which is only to be computed and appreciated when it is understood that a larger proportion of the coasting trade from Maine to Georgia passes it and may require its sheltering protection.

It is a well known fact that want of sea-room is one of the principal evils to be met with in the navigation of the sound in severe storms; and, as a natural consequence, any improvement which will furnish protection against this besetting danger simplifies such navigation.

The harbors immediately affected by this improvement are Huntington, Centreport, and Northport.

The commerce of these harbors reaches and affects the interests of a territory covering some 40 square miles, embracing a present population of about 12,000, which is quite rapidly increasing. They are represented by a fleet of 125 sail, with a gross tonnage of about 12,500 tons.

In passing to and from these harbors when eastward or westward bound to or from New York, it is necessary for them to round Lloyd's Neck.

In the event of the cutting through of the proposed channel, vessels so bound, after leaving the entrance of their respective harbors, would have a straight course before them, lessening the sailing distance about 10 miles, under favorable circumstances. The shore of Lloyd's Neck is rocky, with projecting reefs extending some distance into the sound, which are the frequent source of disasters. The approach to these harbors from the west is at times attended with the greatest danger, by reason of these reefs, while at others it is an impossible feat to accomplish.

The cutting through of this channel will render Huntington, Northport, and Centreport harbors easy of access at any time and under all conditions of weather.

It will place the water communication between these harbors and the city of New York upon a sure and safe basis, thereby affording facilities for manufacturing and commercial interests that the several harbors are now in a measure deprived of.

Owing to the peculiar topography of the country in this vicinity communication by any other means than water is in a certain sense impracticable. The high lands or ridges putting out at about right angles with the sound coast, and forming the division between the several harbors, together with the valleys which make to the south at the head of these harbors, have compelled the line of railroads to skirt along the borders of the valleys on the south, thereby placing them at an inconvenient distance. Any nearer approach by them would be attended by a cost that would render them quite impracticable. The amount of business done within the territory interested in the three harbors mentioned, will, in the aggregate, probably exceed $1,000,000. A very large proportion of this trade is due and owing to water facilities, and any improvement to such water facilities will bring about an increased volume of business proportionate with such improvement.

The necessity for this improvement is well understood in this vicinity, and as a matter of course receives very great attention from the business interests here. It is fully believed that no obstacles of any kind exist that a sum of money at all in proportion to the benefits to be derived by commerce will not overcome.

The material to be removed in the opening of this channel is made up of sand, gravel, and silt deposit easily excavated, and with convenient waste grounds.

Upon the question of the proper width of the proposed channel, some little difference of opinion exists; any uniformity of ideas in this regard could hardly be expected. It is a matter generally conceded as fairly belonging to the gentlemen who are to make the necessary examination and survey to determine. In their judgment the greatest faith exists that the commercial interests of the harbor will be protected, and the welfare of the several harbors immediately affected not overlooked.

An enterprise of great importance affecting the interests of Huntington, Centreport, and Northport, viz, steamer communication between these several places and the city of New York, only awaits the construction of this channel to be put in operation. Too much importance, in a local sense, cannot be attached to this matter of steamboat communication with the city. Our location, as before mentioned, prevents the utilization of our otherwise desirable water fronts for commercial and other purposes, thereby having a material effect upon our prosperity. The present approach to our harbors is a fatal obstacle to any such enterprise.

To summarize, then, in brief, the advantages to be derived from this improvement would be as follows, viz:

1. To furnish a harbor of refuge for a very large proportion of vessels storm bound over a large area of Long Island Sound. (Statistics not obtainable. Facts scattered through so many offices as to make their collection accurately almost impossible. The only correct limit as to amount benefited is measured by the capacity of the harbor.)
2. For the first-named purpose the harbor is gradually becoming useless from want of proper tidal currents to keep it open.
3. These harbors, of great local importance, are at times unapproachable, and at various times and under diverse circumstances the approach is attended with great danger.
4. A considerable saving in time, distance, and expense would be effected thereby in all water communication with the harbors referred to.
5. A large local interest is involved; the commerce, the prosperity, the development of quite a large territory depends upon its consummation; with this regard this improvement is of paramount importance.
6. Statistics: Territory affected, 40 square miles; population, 12,000; commercial interests, annually, $1,000,000; number of vessels interested in harbor, 125; gross tonnage, 12,500 tons.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 32.

INTERNATIONAL CONGRESS OF ELECTRICIANS.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

TRANSMITTING

Correspondence relating to an international congress of electricians to be held at Paris September 15, 1881.

JANUARY 11, 1881.—Referred to the Committee on Foreign Affairs and ordered to be printed.

To the House of Representatives:

I submit herewith, for the information of the House of Representatives, copies of a correspondence with the Department of State relating to an invitation extended by the French Republic to this government to send one or more delegates to represent it at an international congress of electricians, to be held at Paris on the 15th day of September, 1881. It appears from the same correspondence that an international exhibition of electricity is to be held at the palace of the Champs Elysées, in Paris, from August 15, 1881, to the 15th of November following, and it is therefore suggested by the French authorities that it might be well to invest the delegates selected to take part in the international congress with the additional character of commissioners to the international exhibition of electricity.

In view of the important scientific, industrial, and commercial interests designed to be promoted by the proposed international congress of electricians and exhibition of electricity, I submit the subject to your favorable consideration, and recommend that a suitable appropriation be made to enable this government to accept the foregoing invitation by appointing one or more delegates to attend the congress in question.

R. B. HAYES.

EXECUTIVE MANSION, *January* 10, 1881.

LIST OF ACCOMPANYING PAPERS.

No. 1. Mr. Outrey to Mr. Evarts, December 23, 1880, with an inclosure. (Translations.)

No. 2. Mr. Noyes to Mr. Evarts, December 10, 1880, dispatch No. 415, with its inclosures. (Copies.)

No. 1.

Mr. Outrey to Mr. Evarts.

LEGATION OF FRANCE IN THE UNITED STATES,
Washington, December 23, 1880.

Mr. SECRETARY OF STATE: By a decree bearing date of the 23d of October last, the President of the French Republic decided that an international congress of electricians should meet at Paris on the 15th day of September, 1881. A private commission was at the same time authorized to organize at its own expense and risk an international exhibition of electricity, to be held at the palace of the Champs Elysées from August 15, 1881, to the 15th of November following.

I have the honor herewith to send you a report of the minister of posts and telegraphs, which clearly indicates the scope and character of this twofold scientific solemnity, and to this report I take the liberty to call your attention. You will thereby see, Mr. Secretary of State, that the exhibition, although a private enterprise, is nevertheless under the patronage of the state, which has extended to inventors and holders of patents all the guarantees furnished by the law of France. A rigid surveillance will therefore be exercised by the officers of the government and by the commissioner-general, whose appointment the government has reserved to itself. Under these circumstances, the government of the republic has thought that that of the United States would favorably receive an invitation to send one or more delegates to represent it at this international congress, the deliberations of which may be productive of very important results to science and industry throughout the world. It might also be well to invest, at the same time, the delegates selected to take part in the Congress, with the character of commissioners near that section of the international exhibition of electricity which corresponds to their nationality.

If, as we hope, the United States desire to participate in a work which has the interests of science in view, I will thank you to communicate to me, as speedily as possible, the names of the delegates who shall be designated.

Be pleased to accept, Mr. Secretary of State, the assurances of my very high consideration.

MAX. OUTREY.

Hon. WILLIAM M. EVARTS,
Secretary of State of the United States.

No. 2.

Mr. Noyes to Mr. Evarts.

No. 415.] LEGATION OF THE UNITED STATES,
Paris, December 10, 1880.

SIR: I have the honor to transmit herewith three copies of the general regulations of the international exhibition of electricity, to take place at Paris in 1881, in which the French Government have invited foreign nations to participate.

Mr. Cochery, the minister of post-offices and telegraphs, from whom I receive them, includes a copy of his report to the President of the re-

public, on the subject of an international congress of electricians, which document will also be found annexed.

I am informed that the French Government is exceedingly desirous that American electricians shall take part.

I have the honor to be, with high respect, your obedient servant.

EDWARD F. NOYES.

Hon. WILLIAM M. EVARTS,
Secretary of State, Washington, D. C.

[Inclosure 1 in No. 415.—Translation.]

MINISTRY OF POSTS AND TELEGRAPHS.

INTERNATIONAL CONGRESS OF ELECTRICIANS—INTERNATIONAL EXHIBITION OF ELECTRICITY, PARIS, 1881.

Report to the President of the Republic.

Mr. PRESIDENT: Important and unexpected discoveries have recently called public attention, very particularly, to whatever relates to electricity; at the same time, those interested in the progress of manufacturing industry have availed themselves of these scientific conquests, and have, for several years past, multiplied their application in all branches of that industry; it seems, to-day, as if no science were destined to accomplish more rapid progress, to solve problems of greater interest to national economy, or to render more valuable services to all our relations, than that of electricity.

Electricity long remained a capricious and inconstant agent, difficult to master, and which could not possibly be utilized. Before Voltaire's time its action was observed, but it could neither be explained nor produced; still less could it be measured.

The discovery of the pile and the improvements which were soon made to it, the labors of Ampère and Arago upon currents and their magnetic action, and the investigations of Faraday in relation to induction, opened new and fertile channels in which progress has never ceased.

The pile and the magnetic action of currents created telegraphy. The development of telegraphy freed electrical phenomena from the darkness which surrounded it. The submarine cable afforded the means of studying and discovering the laws which govern the development and propagation of electrical action.

Electricity is a force. As it has become known it has been found everywhere; sometimes as a cause, sometimes as an effect, in physical, chemical, mechanical, and organic phenomena. Different means now exist for its production. It is measured and applied to the most varied uses. It possesses this peculiar property, viz, that its effects may be transmitted by metallic conductors more easily and to a greater distance than those of steam can be by mechanical agencies.

It no longer merely sends telegraphic signals to a distance; it reproduces sounds, and even words; it increases the safety of railway travel; agriculture and navigation are indebted to it for meteorological information which is constantly becoming more useful; it lights streets, public squares, warehouses, and workshops. It is becoming a universal auxiliary to arts and manufactures.

Scientific men and manufacturers are now seeking, in every country, to improve the means of producing and utilizing the new force. The results obtained are already important and numerous, but still often insufficient or incomplete. It would be very interesting thoroughly to define the state of electrical science and its applications, and to bring together and compare the processes of investigation, in order to secure for the efforts which are everywhere being made a direction that could facilitate them and secure their success.

The international exhibitions, and the scientific congresses which have so usefully supplemented them, have rendered it possible to show the practical application of electricity, together with its theory. This has led us to propose to you the convocation of an international congress of electricians, and the authorization at the same time of an international electrical exhibition, which will be, so to speak, the laboratory of the congress. This exhibition will comprise everything relating to electricity; it will include apparatus of all kinds, and from every country, serving to produce, propagate, and utilize it.

The congress convoked by the French Government will bring the most renowned electricians to Paris. These representatives of the marvelous science which has scarcely yet revealed the immensity of its resources, and which bewilders the mind with its incessant surprises, will discuss the results obtained and the ideas that have

been recently put forth; they will group and arrange their forces in order securely to utilize the observations made in each country, and to afford assistance to each other in future investigations.

The foreign nations invited by France will eagerly avail themselves of this opportunity to codify, so to speak, electrical science, and to sound its depths. They will thank the Government of the French Republic for having been the promoter of a scientific manifestation whose utility seems incontestible, and whose corollary will be the international electrical exhibition.

The congress must be the work of the government, for it alone can give to the enterprise the independent character which is the essential condition of success. As to the exhibition, it will easily be organized by private enterprise. The patronage and the co-operation of the state will, however, be secured to it, and the palace of the Champs Elysées will be placed gratuitously at the disposal of its organizers.

The action of the government will be completed by the appointment of a commissioner-general, whose duty it shall be to secure the working of the congress under our direction, and to exercise a general superintendence over the exhibition.

The government will designate the French members of the congress. Official science, industry, the learned societies of Paris and of the departments will have their representatives. Although the president of a congress must, according to traditional custom, belong to the country in which the congress is held, one-half of the vice-presidents are to be designated by the guests of France.

The international exhibition of electricity will be opened on the 1st day of August, 1881, and closed on the 15th of November following.

The business of the international congress of electricians will be commenced on the 15th of September, 1881, in the halls of the Trocadero palace.

The department which has charge of the telegraphic service is most directly interested in the question. Its officers take an important part in everything relating to electricity; they examine the various electrical discoveries and prepare the way for their application; they are in communication with all the electricians of the various countries. Telegraphy itself will be greatly benefited, and may be greatly improved by the exposition and the congress.

Entertaining these views, I have caused to be prepared the following draft of a decree, which I have the honor to submit to your approval.

Be pleased to accept, Mr. President, the assurance of my highest respect.

AD. COCHERY,
Minister of Posts and Telegraphs.

The PRESIDENT OF THE FRENCH REPUBLIC, in pursuance of the report of the minister of posts and telegraphs, hereby decrees as follows:

ARTICLE 1. An international congress of electricians shall be held at Paris. It shall meet on the 15th day of September, 1881, the minister of posts and telegraphs being its presiding officer.

ART. 2. Three vice-presidents shall be chosen from among the French members, and three from among the foreign members of the congress.

ART. 3. The ministers of the Government of the French Republic and the ministers of such foreign governments as shall take part in the international congress shall be members of the congress *ex-officio*.

ART. 4. The palace of the Champs Elysees shall be placed, gratuitously, at the disposal of the private commission authorized by the government to organize, at its own expense and risk, an international exhibition of electricity, to be held from August 1 to November 15, 1881.

ART. 5. The international exhibition of electricity shall be under the patronage of the state.

ART. 6. The regulations which shall be adopted for the government of the international exhibition of electricity shall be submitted to the approval of the government, which shall appoint the commissioner-general.

ART. 7. The minister of posts and telegraphs, the minister of foreign affairs, and the minister of public works are hereby charged, each in that which concerns him, with the execution of this decree.

JULES GREVY.

By the President of the Republic:

AD. COCHERY.
Minister of Posts and Telegraphs.
B. SAINT HILAIRE,
Minister of Foreign Affairs.
SADI CARNOT,
Minister of Public Works.
Done at Paris, October 23, 1880.

By a decree dated October 24, 1880, issued in accordance with a suggestion of the minister of posts and telegraphs, Mr. George Berger, who was the director-general of the foreign sections at the Universal Exhibition of 1878, has been appointed commissioner-general of the international congress of electricians and of the international exhibition of electricity.

[Inclosure 2 in No. 415.]

MINISTÈRE DES POSTES ET DES TÉLÉGRAPHES.

EXPOSITION INTERNATIONALE D'ÉLECTRICITÉ.—PARIS.—1881.

Règlement général.

I.—DISPOSITIONS GÉNÉRALES.

ARTICLE PREMIER. L'Exposition internationale d'électricité, autorisée par décret du 23 octobre 1880, sera ouverte à Paris dans le palais des Champs-Élysées, du 1er août 1881 au 15 novembre 1881.

ART. 2. Une Commission, nommeé par décret du 26 novembre 1880, et placée sous la présidence du Ministre des Postes et des Télégraphes, sera consultée sur les mesures relative à l'organisation générale de l'Exposition internationale d'électricité.

ART. 3. Les fonds nécessaires à l'organisation et au fonctionnement de l'Exposition seront fournis au moyen des subventions que l'État pourrait accorder, et par une association de garantie dont les membres souscripteurs se sont interdit tout partage de bénéfices après remboursement de leurs versements avec intérêts de 4 p. %.

Lors de la liquidation des comptes de l'Exposition, après défalcation des remboursements dus aux souscripteurs du capital de garantie, les bénéfices acquis seront laissés à la disposition de l'État, qui, sur les propositions de la Commission d'organisation, en fera profiter des œuvres scientifiques d'intérêt public.

ART. 4. Un Comité technique et un Comité des finances seront constitués. Le Comité technique sera composé de membres de la Commission d'organisation, auxquels un arrêté ministériel pourra adjoindre des personnes étrangères à cette Commission. Le Comité des finances sera composé de membres de la Commission d'organisation et de membres de l'association de garantie.

ART. 5. Le Commissaire général, nommé par décret du 24 octobre 1880, est chargé d'exécuter, sous la haute autorité du Ministre des Postes et des Télégraphes, les décisions prises. Le Commissaire général a la direction du personnel administratif.

ART. 6. Le Commissaire général ou, en son absence, le secrétaire du Commissariat général, assiste de droit aux séances de la Commission d'organisation et des Comités, avec voix consultative.

ART. 7. Les pays étrangers qui auront adhéré à l'Exposition internationale d'électricité seront invités à désigner des Commissaires spéciaux. Ces derniers correspondront directement avec le Commissaire général français.

II.—ADMISSION—CLASSIFICATION.

ART. 8. Les demandes d'admission étrangères et françaises, rédigées autant que possible suivant le modèle annexé au présent règlement, devront être parvenues au Commissaire général à Paris, le 31 mars 1881, au plus tard.

ART. 9. Le Comité technique sera appelé à statuer en dernier ressort sur les demandes françaises d'admission.

ART. 10. Le Commissaire général notifiera, avant le 15 mai 1881, aux exposants l'avis de leur admission ainsi que l'étendue et la localisation de l'espace accordé à chacun d'eux.

ART. 11. Les Commissaires étrangers auront la faculté de demander et de recevoir en bloc les espaces nécessaires aux installations de leurs nationaux.

Les demandes cumulatives des Commissaires étrangers devront être parvenues au Commissaire général avant le 31 mars 1881. Les plans généraux d'installation des locaux accordés à la suite de ces demandes cumulatives devront être soumis à l'approbation du Commissaire général.

ART. 12. Les exposants étrangers appartenant à des pays qui n'auront pas nommé de Commissaires spéciaux pourront correspondre directement avec le Commissaire général français.

ART. 13. Des formules imprimées de demandes d'admission sont tenues à la disposition des intéressés:

Au Ministère des Postes et des Télégraphes, rue de Grenelle-Saint-Germain, 101;

Au siège du Commissariat général, palais des Champs-Élysées, porte nº IV;

Aux sièges des Chambres de commerce et des Sociétés savantes de Paris et des départements.

ART. 14. Les principaux objets admis à être présentés sont compris dans l'énumération suivante :

Appareils servant à la production et à la transmission de l'électricité.

Aimants naturels et artificiels.—Boussoles.

Appareils servant à l'étude de l'électricité.

Applications de l'électricité : á la télégraphie et à la transmission des sons ; — à la production de la chaleur ; — à l'éclairage et à la production de la lumière ; — au service des phares et des signaux ; — aux appareils avertisseurs ; — aux mines, aux chemins de fer et à la navigation ; — à l'art militaire ; — aux beaux-arts ; — à la galvanoplastie, à l'électro-chimie et aux arts chimiques ; — à la production et à la transmission de la force motrice ; — aux arts mécaniques et à l'horlogerie ; — à la médecine et à la chirurgie ; — à l'astronomie, à la météorologie et à la géodésie ; — à l'agriculture ; —aux appareils enregistreurs ; — au fonctionnement des appareils industriels divers ; — aux usages domestiques.

Paratonnerres.

Collections rétrospectives d'appareils concernant les études primitives et les applications les plus anciennes de l'électricité.

Collections bibliographiques d'ouvrages concernant la science et l'industrie électriques.

ART. 15. Les objets admis à être exposés seront reçus dans l'enceinte du Palais des Champs-Élysées à partir du 1er juillet 1881.

Les caisses contenant ces objets devront porter des adresses et des étiquettes spéciales fournies par le Commissariat général.

III.—INSTALLATION.

ART. 16. Les exposants n'auront aucun loyer à payer pour l'occupation des emplacements qui leur auront été attribués.

ART. 17. L'Administration prend à sa charge la mise en état et la décoration générale des locaux du Palais des Champs-Élysées.

Les exposants devront pourvoir, à leurs frais, à l'installation et à la décoration de leurs emplacements respectifs.

Les plans de ces installations et les dessins de ces décorations devront être soumis à l'approbation du Commissaire général.

ART. 18. La force motrice sera fournie à prix débattu aux exposants qui en feront la demande.

La force motrice pourra être fournie gratuitement pendant les expériences nécessaires aux travaux du Congrès international des électriciens organisé par l'État, à l'époque de l'Exposition.

IV.—ENTRÉES.

ART. 19. Les locaux de l'Exposition seront ouverts au public tous les jours, de 8 heures et demie du matin à 6 heures du soir, et de 8 heures à 11 heures du soir.

ART. 20. Des cartes d'entrée gratuites, permanentes et essentiellement personnelles, seront mises à la disposition des membres de la Commission d'organisation, du Comité technique et du Comité des finances ; des membres de l'association de garantie ; des Commissaires étrangers ; des membres du Congrès international des électriciens ; des agents du Commissariat général ; des exposants et des agents de ceux-ci dont la présence aura été reconnue indispensable.

ART. 21. La perception des prix d'entrée, fixés ainsi qu'il est dit à l'article 22 ci-après, sera faite au moyen de billets d'entrée d'une valeur de 50 centimes chacun.

ART. 22. Les prix ordinaires d'entrée sont fixés ainsi qu'il suit :

1° *Pendant les jours de la semaine :*

Matin, de 8 heures et demie à 11 heures	1f 50c
Journée, de 11 heures du matin à 6 heures du soir	1 00
Soir, de 8 heures à 11 heures	1 50

2° *Le dimanche :*

De 8 heures du matin à 6 heures du soir	0f 50
De 8 heures à 11 heures du soir	1 00

V.—POLICE ET SURVEILLANCE—ENTRETIEN.

ART. 23. Une surveillance rigoureuse contre le vol sera organisée par les agents du Commissariat général, avec le concours de la police.

Les précautions les plus minutieuses seront prises contre le feu.

Toutefois l'Administration ne sera pas responsable des pertes occasionnées par le vol ou par l'incendie.

ART. 24. Les objets exposés ne pourront être retirés avant la clôture de l'Exposition, sans une autorisation spéciale du Commissaire général.

Aucun objet exposé ne pourra être dessiné ou photographié sans l'autorisation écrite de l'exposant, visée par le Commissaire général.

ART. 25. Les exposants devront pourvoir par eux-mêmes à l'entretien et au nettoyage de leurs installations.

ART. 26. Un local spécial sera mis à la disposition des exposants qui voudront faire le dépôt de leurs caisses vides pendant toute la durée de l'Exposition.

Les déposants auront à payer un droit de 6 francs par mètre cube.

Toute caisse d'un cubage inférieur à 1 mètre cube payera le prix fixé pour 1 mètre.

Les frais de restauration et de remise en état des caisses vides seront à la charge des déposants.

ART. 27. Les exposants français ou étrangers jouiront des garanties qu'assure la loi du 23 mai 1868 aux auteurs, soit des inventions susceptibles d'être brevetées, soit des modèles et dessins de fabrique qui pourront être déposés aux conseils des prud'hommes.

Il leur suffira de déposer à la préfecture de la Seine, dans le premier mois au plus tard de l'ouverture de l'Exposition, une demande de certificat de garantie pour l'objet exposé.

Ce certificat, n'exigeant le payement d'aucune taxe, sera valable à dater du jour de l'admission jusqu'à la fin du troisième mois qui suivra la clôture de l'Exposition.

VI.—CATALOGUE—RÉCOMPENSES.

ART. 28. Un catalogue général de l'Exposition sera dressé par les soins du Commissariat général et par voie d'entreprise et d'adjudication.

L'entrepreneur du Catalogue général pourra s'entendre directement avec les exposants officiellement inscrits pour l'insertion des réclames, avis et vignettes concernant les objets de leur commerce ou de leur industrie.

ART. 29. Des diplômes de mérite et des médailles de diverses classes seront accordés sur proposition d'un Jury dont la composition sera déterminée ultérieurement.

ART. 30. Toutes les communications relatives à l'Exposition internationale d'électricité doivent être envoyées affranchies, à l'adresse du *Commissaire général de l'Exposition internationale d'électricité, au Palais des Champs-Élysées, porte nº IV, à Paris.*

Vu et approuvé le présent Réglement, délibéré dans la Commission d'organisation, le 6 décembre 1880 :

Le Ministre des Postes et des Télégraphes,
AD. COCHERY.

Par ampliation :
Le Commissaire général,
GEORGES BERGER.

MINISTÈRE DES POSTES ET DES TÉLÉGRAPHES.

EXPOSITION INTERNATIONALE D'ÉLECTRICITÉ, PARIS, 1881.

Demande d'admission No —— (1).

Je soussigné (2) —— —— demeurant à (3) —— —— demande à être admis à exposer les objets ci-après énoncés :

Déclarant avoir pris connaissance du Règlement général et y adhérer, je désire obtenir les espaces désignés ci-dessous, aux conditions fixées par les articles 16, 17, et 18 dudit Règlement général.

Surface horizontale sur sol. { Longueur :
Largeur :

Surface verticale sur parois. { Largeur en façade :
Hauteur :

Force motrice : —— chevaux-vapeur, chaque jour pendant —— heures.

Le —— — 1881.

(Signature.)

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(1) Laisser cette indication en blanc.

(2)—(3) Écrire très lisiblement et en gros caractères les noms, prénoms, raison sociale et adresse.

NOTA.—La présente demande doit être expédiée à l'adresse de Monsieur le Commissaire général de l'Exposition internationale d'électricité, au palais des Champs-Élysées, porte nº IV, à Paris.

L'affranchissement est nécessaire.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 33.

EMPLOYÉS IN DEPARTMENT OF STATE.

LETTER

FROM

THE SECRETARY OF STATE,

TRANSMITTING

A list of all clerks and employés of the State Department and their salaries.

JANUARY 11, 1881.—Referred to the Committee on Expenditures in the Department of State and ordered to be printed.

DEPARTMENT OF STATE,
Washington, January 5, 1881.

SIR: In compliance with the requirements of section 194 of the Revised Statutes of the United States, I have the honor to report as follows: "The names of the clerks and all other persons employed in the Department of State, or in any of its offices, during the year 1880, with the time each was actually employed, the sum paid to each, and the residence of each at the time of his appointment."

And I have further to add that the persons hereinafter named have all been usefully employed; that the services of none now employed can be dispensed with, nor is the removal of any and the appointment of others required for the better dispatch of business.

I have the honor to be, sir, your obedient servant,

WM. M. EVARTS.

Hon. SAMUEL J. RANDALL,
Speaker of the House of Representatives.

Report of the names of the clerks and others employed in the Department of State, or any of its offices, during the year ending December 31, 1880, *with the time each was actually employed, and the sum paid to each.*

Name.	Capacity.	Time employed.	Amount paid.	Residence when appointed.
Sevellon A. Brown	Chief clerk	12 months	$2,500 00	New York.
Robert C. Morgan	Chief of Bureau of Accounts.	do	2,100 00	Do.
John H. Haswell	Chief of Index Bureau.	do	2,100 00	Do.
Arthur B. Wood	Chief of Consular Bureau.	do	2,100 00	Do.

Names of the clerks and others employed in the Department of State, &c.—Continued.

Name.	Capacity.	Time employed.	Amount paid.	Residence when appointed.
Alvey A Adee	Chief of Diplomatic Bureau.	12 months	$2,100 00	District of Columbia.
Michael Scanlon	Chief of Bureau of Statistics.	do	1,974 80	New York.
Henry L. Thomas	Translator	do	2,100 00	Do.
George L. Berdan	Clerk	10 months	1,183 80	Kentucky.
John P. Polk	do	4 months	531 30	Pennsylvania.
Edward Haywood	do	12 months	1,800 00	New York.
George Bartle	do	do	1,800 00	Virginia.
Alexander H. Clements	do	do	1,800 00	District of Columbia.
Francis O. St. Clair	do	do	1,800 00	Do.
Newton Benedict	do	do	1,800 00	New York.
John J. Chew	do	do	1,800 00	District of Columbia.
Theodore F. Dwight	do	do	1,800 00	California.
Max. V. Z. Woodhull	do	do	1,767 00	District of Columbia.
Henry A. Blood	do	do	1,734 10	New Hampshire.
Francis J. Kieckhoefer	do	do	1,683 50	District of Columbia.
Charles S. Hill	do	do	1,555 20	New York.
Prescott Evarts	do	5 months	749 90	Do.
Charles H. Russell, jr	do	6 months	900 00	Do.
Thomas Morrison	do	12 months	1,600 00	Do.
Prosper L. Schucking	do	do	1,600 00	District of Columbia.
Henry P. Randolph	do	do	1,600 00	Virginia.
James R. O'Bryon	do	do	1,316 50	District of Columbia.
William A. Van Duzer	do	do	1,283 20	New York.
James Taggart	do	12 days	45 65	Do.
James H. Smith	do	12 months	1,200 00	District of Columbia.
T. John Newton	do	do	1,200 00	Do.
Mary Markoe	do	do	1,200 00	Maryland.
William Russell	do	do	1,200 00	District of Columbia.
Alfred Williams	do	do	1,200 00	Ohio.
Thomas W. Cridler	do	do	1,074 70	West Virginia.
Charles I. Rider	do	do	1,116 50	District of Columbia.
George L. Scarborough	do	do	1,074 70	Connecticut.
Towson Caldwell	do	9 months	900 00	New York.
Philip Carroll	do	1 month	102 20	Georgia.
George E. Baker	do	6 months	600 00	District of Columbia.
James H. Colegate	do	12 months	1,000 00	Do.
Robert S. Chilton, jr	do	do	925 00	Do.
Charles McCarthy	do	do	900 00	Do.
Thomas Griffin	do	do	900 00	Do.
Sue Hamilton Owen	do	do	900 00	Georgia.
Nellie M. Joselyn	do	do	900 00	Indiana.
Louise A. Pratt	do	do	900 00	Massachusetts.
John B. Hawes	do	do	900 00	California.
James B Philp	do	do	900 00	New York.
Stanislaus M. Hamilton	do	7 months	524 20	District of Columbia.
Andrew H. Allen	do	3 months and 15 days	261 68	New York.
Frank M. Lee	do	2 months	149 20	Maryland.
Waldemar A. Flechter	do	10 months	758 80	Ohio.
George McClelland	Chief engineer	12 months	1,200 00	District of Columbia.
Louis Beauregard	Assistant engineer.	do	1,000 00	Do.
Joseph Smallwood	Fireman	do	720 00	Do.
Jeremiah J. Brosnan	do	do	720 00	Do.
Patrick Farquhar	do	do	720 00	Do.
John McCarthy	do	do	720 00	Virginia.
Nicholas Caffrey	do	do	720 00	New York.
John Butler	do	do	720 00	District of Columbia.
Thomas Toner	Conductor of elevator.	do	720 00	Do.
Francis P. Burke	Superintendent of watch.	do	919 25	Do.
Albert B. Scrivener	Assistant superintendent of watch.	do	760 04	Do.
Robert Hamilton	Watchman	do	800 81	Do.
George Wohlforth	do	do	675 00	Do.
John Donnelly	do	do	720 00	Pennsylvania.
Robert Wilson	do	do	720 00	New York.
John A. Graves	do	do	720 00	District of Columbia.
James H. Sprigman	do	do	720 00	Pennsylvania.
Peter Hughes	do	9 months	540 00	District of Columbia.
William Gwin	Messenger	do	840 00	Virginia.
William B. Browne	Assistant messenger.	do	694 90	District of Columbia.
Emmett Burwell	Laborer	do	660 50	Arkansas.
John T. Johnson	do	do	660 50	District of Columbia.
James Williamson	do	do	660 50	Do.
Frank N. Moore	do	3 months	165 00	Do.

Names of the clerks and others employed in the Department of State, &c.—Continued.

Name.	Capacity.	Time employed.	Amount paid.	Residence when appointed.
Henry Freeman	Laborer	12 months	$660 50	North Carolina.
John Barry	do	do	660 50	
Henry Jarvis	do	do	660 50	District of Columbia.
Edward A. Savoy	do	do	660 50	Do.
John H. Burrill	do	do	660 50	Virginia.
Richard Gillem	do	do	660 50	Maryland.
Russell Boyd	do	do	660 00	District of Columbia.
James Quin	do	2 months	89 40	
Annie Dempsey	Charwoman	12 months	180 00	District of Columbia.
Ellen Quin	do	do	180 00	Do.
Mary Hines	do	do	180 00	Do.
Mary McGrath	do	do	180 00	Do.
Susan Butler	do	10 months	150 20	Do.
Fannie Crowner	do	2 months	29 80	Do.
Georgiana Thomas	do	12 months	180 00	Do.
Mary A. Wright	do	do	180 00	Do.
Eliza J. Nicholson	do	do	180 00	Do.
Laura A. Moody	do	do	180 00	Do.
Mary Gaynor	do	do	180 00	Do.
Alice B. Legaré	Extra clerk	do	900 00	South Carolina.
Edward S. Martin	do	2 months and 14 days	168 10	New York.
Stella Yale	do	12 months	900 00	Do.
M. M. De Meza	do	6 days	24 00	
Sophie D. Markoe	do	12 months	900 00	District of Columbia.
Walter H. Chew	do	7 months	350 00	Do.
F. C. Oakley	do	5 months and 5 days	388 16	New York.
Walter Scott	Mail clerk	12 months	837 60	District of Columbia.
Annie C. Knox	Extra clerk	5 months and 23 days	431 70	Alabama.
William B. Harveycutter	do	1 month and 9 days	129 35	District of Columbia.
Radcliff Baldwin	Dispatch agent	12 months	1,000 00	New York.
B. F. Stevens (London)	do	do	2,000 00	
George Scroggs (Hamburg).	do	do	750 00	

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 34.

SURVEYS OF VARIOUS STREAMS IN DELAWARE, PENNSYLVANIA, AND NEW JERSEY.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of surveys of Rancocas River, Appoquinimink Creek, Saint Jones' Creek, Little Creek, and Christiana River, Delaware, and Chester and Ridley Creeks, Pennsylvania.

JANUARY 13, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 13, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, dated the 12th instant, and accompanying copies of reports from Col. J. N. Macomb, Corps of Engineers, upon examinations and surveys, made in compliance with the provisions of the river and harbor act of June 14, 1880, of Rancocas River, from Delaware River to Pemberton, N. J.; Chester Creek, Pennsylvania; Ridley Creek, Pennsylvania; Appoquinimink Creek, Delaware; Saint Jones' Creek, Delaware; Little Creek, Delaware; and Christiana River, Delaware.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 12, 1881.

SIR: In compliance with requirements of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Col. J. N. Macomb, Corps of Engineers, of the results of examinations and surveys, made under his direction at the following localities, with the view to improvement, viz:

1. Rancocas River, from Delaware River to Pemberton, N. J.

2 and 3. Chester and Ridley Creeks, near their outlets in Delaware River.

4. Appoquinimink Creek, Delaware.
5 and 6. Saint Jones' Creek, and Little Creek, Delaware.
7. Christiana River, Delaware, with estimates of cost of procuring a mean depth of 15 feet from railroad bridge to the mouth of the river.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

EXAMINATION OF RANCOCAS RIVER, FROM THE DELAWARE RIVER TO PEMBERTON, BURLINGTON COUNTY, NEW JERSEY.

UNITED STATES ENGINEER OFFICE,
Philadelphia, Pa., January 4, 1881.

GENERAL: I have the honor to submit the following preliminary report on the examination of "Rancocas River from the Delaware River to Pemberton, Burlington County, N. J.," required by river and harbor act of June 14, 1880.

The Rancocas enters the Delaware 5 miles above Bridesburg, Pa., and drains an area of about 350 square miles of rich and prosperous agricultural country, containing numerous towns and villages.

The survey was carried up from the mouth to Mount Holly by means of a tier of triangles, resting on a base at Delanco, and checked by a secondary base above. Between Mount Holly and Pemberton the woods press upon the valley, and this portion was surveyed by traverse lines.

Six tide-gauges were established at convenient points. That at Delanco, one mile above the mouth, was observed consecutively for 38 days, the others only during hydrographic work in their vicinity, the observation being corrected by the Delanco gauge.

Owing to the extraordinarily early formation of ice and occurrence of heavy snow-falls, the soundings and connection of the gauges by leveling were not completed by the time it became necessary to recall the field parties, and it was only practicable to obtain the hydrography from the mouth to Mount Holly, with a gap of 2½ miles from Busby's to the Forks, which remains to be closed in the spring.

The condition of the stream, however, over this interval, was carefully observed, and the extent of the obstructions estimated with a fair approximation to accuracy.

In order not to delay this report until the final charting of the field-work could be completed, advantage has been taken of the linear data afforded by the official maps prepared for the riparian commission of the State upon which the soundings have been plotted and the curves of depth drawn. A tracing of these maps is forwarded herewith.

The Rancocas is a stream of good natural capacity, and, as the commercial statistics show, the medium of a heavy traffic, which suitable improvements would increase, according to various estimates, between 50 and 100 per cent.

According to the riparian commission chart, the width at the mouth is about 600 feet between the low-water marks, and the average width to the Forks, 8 miles above, is rather in excess of 400 feet. The embouchure is into deep water in the Delaware, where the tidal range is nearly 6 feet, and a draught of between 7 and 8 feet can be carried in

over the bar at low-water. After entering, the 12-foot low-water curve occupies a large portion of the navigation up to Hamill's Island and occasionally reappears above. The first serious obstructions encountered are below Hamill's Island, 3½ miles from the mouth, where the 12-foot curve is interrupted, and at Coate's Bar, a half mile further, which even the 6-foot curve fails to pass. The difficulties in this vicinity are due to two causes, viz, the separation of the river into two channels by Hamill's Island and the interference caused by the discharge from Mill Creek, whose low-water channel has an upward direction, and forms a bar opposite its mouth. A permanent improvement can, in all probability, be effected by the removal of the shoals by dredging and the construction of a *dike* from the upper end of Hamill's Island to the bank above, thereby excluding the river from the channel back of the island and restricting it to more nearly its normal dimensions.

To enable the discharge from Mill Creek to take the proper direction and pass out by way of the back channel, the construction of a new mouth, curving downward, will be desirable.

At six points between Coate's Bar and Centreton, 7¼ miles above the mouth, the channel is either divided or unduly narrowed by bars lying in the stream or extending from the shore. In most of these cases the effect of dredging would probably be largely permanent. In others it is possible that local causes exist that will be discovered and remedied in the course of the improvement. The dredging estimated for will be necessary in any case.

Three-fourths of a mile above Centreton, and 8 miles from the mouth, the river forks; the north branch leading to Mount Holly, Smithville, and Pemberton; the south, and rather the larger branch, to Hainsport, Lumberton, and Medford.

Between the Forks and Mount Holly, 3½ miles in a straight line and 5 miles by water, the stream is reduced to about ⅓ of its width below, with a corresponding loss of depth and power. The average low-water width is about 100 feet.

The tidal range, which at Centreton is nearly 4 feet, is reduced at Mount Holly to about a foot, and the variation is obscured by the greater variation due to the opening and closing of the water power created by a dam above.

Mount Holly is a town of 500 inhabitants, the seat of large and varied industries, and the center of a rich farming region. In its upper suburb a dam has been constructed, giving a head of about 20 feet. Below this the stream now has a nearly continuous low-water channel of 2 feet, the deepening of which is regarded as of great importance to the commerce of Mount Holly and the points above.

Between Mount Holly and Pemberton, a distance of 6 miles in a straight line and 9 miles by the creek, the stream becomes still narrower and more tortuous. The hydrography has not been obtained, but to continue the navigation over this portion will require the construction of two sets of locks of 10 feet lift to overcome the rise of the dam.

The existing commerce of the Rancocas is carried on by means of numerous steam and sailing vessels and barges, the draught of which to Centreton is now limited to 6 or 7 feet by the Coate's Bar and the other obstructions. At Centreton are extensive fertilizer works, which import phosphate rock from Charleston. The smallest vessels engaged in this trade carry 300 to 400 tons on a draught of about 10 feet. An increased depth over the bars would enable these cargoes to reach Centreton direct without breaking bulk.

The improvement, therefore, of this portion of the stream is based

upon obtaining a certain depth of 6 feet at low-water, and for the north branch between the Forks and Mount Holly, 5 feet at low-water. The amount at each point and the corresponding estimate of cost are given in the following table:

Estimate of cost of a 6-foot low-water channel to Centreton, and a 5-foot low-water channel to Mount Holly.

Locality.	Distance from mouth.	Material.		Price.	Cost.	Remarks.
		Amount.	Nature.			
	Miles.	*Cub. yds.*				
Hamill's Island Bar	3½	8,745	Sand and mud.	$0 40	$3,498	Calculated.
Coate's Bar	4	25,000	....do	40	10,000	Do.
Dike	4	*700	Timber	5 00	3,500	Do.
Mouth Mill Creek	4	6,000	Sand and mud.	40	2,400	Do.
Below Van Skiver's	5	10,445	....do	40	4,178	Do.
Above Van Skiver's	5¼	9,150	....do	40	3,660	Do.
Abreast of Busby's	5½	8,000	....do	40	3,200	Estimated approximation.
Above Joist wharf	6	10,000	....do	40	4,000	Do.
Below lime works	6¾	10,000	....do	40	4,000	Do.
At Centreton	7¼	7,000	....do	40	2,800	Do.
Between Forks and Mount Holly	13	100,000	....do	40	40,000	Calculated.
Total					81,236	

* Linear feet.

Table of distances and tidal ranges.

Locality.	Distance, in miles.	Tidal range, in feet.	Remarks.
Rancocas River mouth			*Thirty-eight days' observations.*—The observations at other gauges were for shorter intervals and corrected by the Delanco gauge.
Delanco (tide gauge)	1	5.3	
Bridgeborough (tide gauge)	3	4.98	
Hamill's Island Bar	3½		
Coate's Bar	4		
Mill Creek	4		
Van Skiver's (tide gauge)	5	4.16	
Busby's	5½		
Centreton (tide gauge)	7¼	3.95	
The Forks	8		
Hanies Wharf (tide gauge)	10	3.50	
Mount Holly (tide gauge)	13	1.31	Mount Holly is 3½ miles above the Forks in a straight line.
Smithville	15		
Pemberton	22		Pemberton is about 6 miles from Mount Holly in a straight line.

Tide gauges were established and observed at points for which the tidal range is given.

DATA IN RELATION TO BRIDGES ON THE RANCOCAS.

1. The turnpike bridge, crossing the river about 1 mile above the mouth, is a double swing bridge with two openings of 45 feet each.

2. Camden and Amboy Railroad bridge is a single swing with an opening of 30 feet. The bridge is built at a bend in the river, and the pier stands at an angle with the currents, offering much difficulty to vessels passing up.

3. Bridgeborough bridge is a draw sliding along the axis of the bridge. The width of opening is 30 feet.

4. Centreton bridge is a single swing with an opening of 30 feet.

The narrowness of these openings is now a considerable obstruction to river traffic, which the proposed improvement would render relatively much greater.

The width of opening should be not less than 45 feet in the clear, and a greater width would be desirable up to, say, 60 feet.

Table of approximate annual freightage on Rancocas River.

Nature of freight.	Amount.	Value.	Remarks.
Moulding sand ..... tons..	80,000 to 100,000	$120,000 to 150,000	Shipped to Baltimore, Buffalo, and other points.
Lumber ..... feet..	5,000,000	100,000	Imported and shipped.
Manure ..... tons..	7,500	30,000	Imported.
Produce ..... do...	10,000	100,000	Shipped.
General merchandise ..... do...	5,000	300,000	Imported.
Lime and building sand ... bushels..	55,000	6,500	Shipped.
Oyster shells ..... tons..	5,000	5,000	Imported.
Grain, feed, and flour ..... do...	800	50,000	Shipped and imported.
Coal ..... do...	7,000	35,000	Imported
Fertilizer material ..... do...	4,000	.....	Imported from Maine, Connecticut, South Carolina, Germany, and Sicily.
Fertilizers ..... do...	3,000	105,000	Shipped.

Number of vessels engaged, of all classes, in the commerce of the creek, as nearly as can be ascertained is 1,000, with an average tonnage of 100 tons each; draft from 4½ to 8 feet.

The shipments of the heavier freights, moulding sand, coal, &c., are in canal-boats.

Very respectfully, your obedient servant,

J. N. MACOMB,
Colonel of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

SURVEY OF CHESTER CREEK, PENNSYLVANIA.

UNITED STATES ENGINEER OFFICE,
Philadelphia, Pa., January 4, 1881.

GENERAL: I have the honor to submit the following report, accompanied by a tracing of the chart of Chester Creek, Pennsylvania, in accordance with section 2 of the river and harbor act of June 14, 1880.

The creek rises in the range of cultivated hills lying a few miles west from the city of Chester, a place of large and growing population, and the seat of varied and important industries.

The creek passes through the heart of the city, and discharges into the Delaware River. It, therefore, acts both as a drainage sewer for the city, and by means of the small craft, canal boats, &c., a valuable feeder as well.

The survey was carried from the mouth to the village of Uplands, a distance of 2 miles, by means of triangulation and traverse lines. Two tide-gauges were observed, one at the mouth, the other at Bunting's Wharf, half-way to Uplands. A line of levels connected the two gauges, and the slope of the surface at low-water was ascertained to be 0.042 or about 0.038 feet to the mile.

The entrance from the Delaware, in which the tidal range is 6 feet, is over a bar of soft material having between 4 and 5 feet depth at low-water; thence as far as Bunting's wharf, 5,700 feet, the 6 feet low-water curve occupies the greater portion of the stream. The bridge at Third

street, however, is a permanent structure, with limited head room at high-water, and the navigation for masted vessels, therefore, terminates at this point.

The tidal range at Bunting's is 5.9 feet, nearly the same as at the mouth. Between these two points the average low-water width is about 70 feet. Above Bunting's the width and depth decrease considerably, and below Kirlan street bridge, at the village of Uplands, the terminus of the survey, the bed of the stream is bare at low-water. There are some points below Bunting's where the existence of rock in the creek bed is indicated by the chart, viz, 300 feet below Third street bridge, 500 feet above Third street bridge, 125 feet above Philadelphia, Wilmington and Baltimore Railroad bridge, 125 feet below Seventh street bridge, 700 and 900 feet above Seventh street bridge, and 200 and 100 feet below Bunting's Wharf; and between Bunting's and Uplands these indications are quite numerous, with frequent exposure of rock and bowlders. It is probable that if the improvement of the upper portion of the stream particularly, is undertaken it will be found necessary to make some rock excavation to secure a channel of the desired width and depth. The nature of the present examination was not such as to afford exact information on this point; to cover which, a careful examination by borings is required.

The project for the improvement of the creek contemplates its division into four sections, with suitable channel dimensions in each, diminishing upward.

SECTION I. *From the mouth to Third street bridge.* Distance = 1,575 feet.

Channel to be 30 feet wide and 7 feet deep at low-water. Amount to be dredged, 2,883 cubic yards mud. Cost, at 35 cents, $1,009.

SECTION II. *From Third street bridge to Bunting's.* Distance = 5,025 feet.

Channel to be 25 feet wide and 6 feet deep at low-water. Material to be dredged, 7,800 cubic yards sand, mud, and gravel. Cost, at 50 cents, $3,900.

SECTION III. *Bunting's to ½ mile above.* Distance = 2,400 feet.

Channel to be 25 feet wide and 4 feet deep at low-water. Material to be dredged, 5,100 cubic yards sand, mud, and gravel. Cost, at 55 cents, $2,805.

SECTION IV. *From end of Section III to Kirlan street bridge.* Distance = 3,100 feet.

Channel to be 25 feet wide and 2 feet deep at low-water. Material to be dredged, 5,111 cubic yards sand, mud, and gravel. Cost, at 60 cents, $3,067.

RECAPITULATION.

	Material.		Price.	Cost.
	Quantity.	Kind.		
	Cub. yds.			
Section I	2,883	Mud	$0 35	$1,009 00
Section II	7,800	Mud, sand, gravel	50	3,900 00
Section III	5,100	....do	55	2,805 00
Section IV	5,111	....do	60	3,067 00
Totals	20,894			10,781 00

The accompanying letter from Mr. W. Ward, the member of Congress from Chester, contains some statistics bearing upon the commerce of the creek.

Very respectfully, your obedient servant,

J. N. MACOMB,
Colonel of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

Table of distances, bridges, &c., on Chester Creek.

Locality.	Distance.	Remarks.
	Feet.	
Delaware River	.....	Range of tide 6 feet.
Philadelphia and Reading Railroad bridge.	675	Draw-bridge.
Third street bridge	1,575	Permanent bridge; head room 7 or 8 feet at high-water.
Philadelphia, Wilmington and Baltimore Railroad bridge.	3,000	Permanent bridge; head room about 15 feet at high-water.
Seventh street bridge	3,525	Permanent bridge; high-water head room 15 feet.
Bunting's wharf	3,700	Range of tide 5.9 feet. Beginning of Section III.
Upper end Section III	8,100	
Kirlan street bridge	11.200	Permanent bridge; limit of survey.

COMMERCIAL STATISTICS.

CHESTER, PA., *January* 3, 1881.

DEAR SIR: Respecting the statistics on Chester Creek, I have the honor to report the following:

There are located on this creek 8 lumber and coal yards, with an aggregate business of $230,000 per annum; 12 factories and industrial establishments, including James P. Crozer's mills, at Uplands, and the Patterson Mill. These are establishments of magnitude, and the volume of their business runs into many millions per annum.

In additon to the above, the wharf at which the supply of vegetables, fish, and oysters, for the accommodation of the city and vicinity, is located on this creek, and the aggregate business done in the course of a year amounts to from $83,000 to $100,000.

I would respectfully call your attention to the fact that the causeway at the United States pier, at the mouth of this creek, needs raising; also that a bar is forming at the mouth of the creek, which proves a serious impediment. With the facilities for navigation improved, Chester Creek would present an attractive site for industrial enterprise.

Yours respectfully,

W. WARD.

Colonel MACOMB.

EXAMINATION OF RIDLEY CREEK, DELAWARE COUNTY, PENNSYLVANIA.

UNITED STATES ENGINEER OFFICE,
Philadelphia, Pa., December 30, 1880.

SIR: I have the honor to forward herewith a tracing of the chart of Ridley Creek, Delaware County, Pennsylvania, made during the past season, in accordance with section 2 of the river and harbor act of June 14, 1880.

The extensive plant of the print works, operated by the Eddystone Manufacturing Company, occupies about 30 acres near the mouth of the creek. The remaining lands bordering on the creek in this vicinity belong to William Simpson & Sons, who are also proprietors of the print works. They are now engaged at their own expense in improving the navigation by deepening it and altering its course with the view of straightening it; this is being done under an order of court of Delaware County, in compliance with laws of Pennsylvania. For this reason, no project or estimate is submitted for the improvement of the navigation by the United States.

COMMERCIAL STATISTICS.

The business of the creek, as ascertained, is as follows:

The Eddystone Print Works employ about 600 people and produce about 60,000,000 yards of prints per annum. Much of their heavier freight is transported by water, as follows:

9 sloops, coal, 398 tons.
29 sloops, wood, 954 cords.
75 barges, coal, 16,761 tons.
4 barges, lumber, 875 tons.
5 schooners, lumber, 1,180 tons.
872 steamboats, miscellaneous, 10,000 tons.

In addition to the above, 9 sloops and 60 barges are regularly engaged in carrying stone, sand, coal, &c., to and from various points on the creek.

The draft of the vessels engaged in this traffic is from 5 to 7 feet.

Very respectfully, your obedient servant,

J. N. MACOMB,
Colonel of Engineers.

To the CHIEF OF ENGINEERS, U. S. A.

EXAMINATION OF APPOQUINIMINK CREEK, DELAWARE.

UNITED STATES ENGINEER OFFICE,
Philadelphia, Pa., January 1, 1881.

GENERAL: I have the honor to forward herewith report and tracing of chart of Appoquinimink Creek, Delaware, in accordance with section 2 of the river and harbor act of June 14, 1880.

The navigation is shown by the chart to be of good natural capacity, the available depths averaging 7 to 10 feet at low-water. There are reaches, however, where the 6-foot low-water channel is interrupted, aggregating in all about 3,500 feet, the improvement of which would clear the 9½ miles to Odessa.

As a rule, the construction of canals, though of great convenience to shipping, should be projected sparingly from their cost and the partial diminution of the tidal prism due to the shortening of the stream. At certain points, however, the excessive curvature of the creek is so serious a disadvantage as to justify the construction of cut offs, such as, for example, at K and H on the chart. When projected they should be so designed as to conform to natural laws. The canal already constructed at I is an illustration of violation of these. The canal at its lower end encounters the creek at right angles, and the flood current tends to pass the mouth, while the ebb strikes the opposite bank. If properly planned, these cut-offs from the greater head, due to shortening the distance, have a brisker flow than that in the stream, and are therefore able to maintain a suitable depth with much less width; but the faulty direction of the cut-off at I diminishes the draught to 4 feet at low-water. A comparatively small addition to the original cost would have given it a suitably-curved direction, with great benefit. If this canal should be widened and deepened, the proper curve should be given it by deflecting the south end eastwardly.

The improvement of the entrance to such depth as can be readily obtained in the creek would require dredging through a distance of 3,500

feet to the 8-foot low-water curve in the bay. The rise of tide and the soft bottom, however, will admit vessels drawing 8 feet or 9 feet, which can then proceed up the improved creek without detention.

Very respectfully, your obedient servant,

J. N. MACOMB,
Colonel of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. W. S. EDWARDS, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Philadelphia, Pa., December 20, 1880.

COLONEL: The following report and accompanying map of the reconnaisance of the Appoquinimink Creek, Delaware, are respectfully submitted.

The examination extended from Odessa, the head of present navigation, to the entrance, 9½ miles. The field work was done with a compass and chain. Soundings were taken from Odessa to the mouth of the creek, the topography sketched, and local names noted.

The creek is bordered by salt marsh, with occasionally the fast land coming down to the water, and in several places the marsh has been embanked, drained, and cultivated successfully. The country along the creek is a district of rich farming lands, slightly undulating, and generally highly cultivated. The cultivation of fruits and vegetables for the Philadelphia market has been largely entered into, as the statistics show. It is a tidal stream, about 20 miles in length, lying altogether in the State of Delaware, and emptying into the Delaware Bay, 5 miles below Port Penn and 46 miles below Philadelphia, having a width of 180 feet at its mouth and 120 feet at Odessa, with an average width of 130 feet. It drains an area of about 59 square miles.

Odessa is a town of about 500 inhabitants, and is 2 miles from Middletown, the nearest railroad communication, and has tri-weekly communication with Philadelphia by steamer. Vessels drawing 7 feet are able to sail up to Odessa at high-water. At present the improvements designed are the deepening of the channel at several points so as to give 6 feet at mean low-water up to the Odessa wharves, and the cutting of canals for the purpose of straightening the creek.

On the accompanying map the different improvements are designated by Roman numerals and letters, and are as follows:

	Length.	Width.	Depth.	Amount.	Cost.	Remarks.
	Yds.	*Yds.*	*Yds.*	*Cub. yds.*		
I. Rock Beach Shoal	250	13	.55	1,625	$813	Estimated at 50 cents per cubic yard.
II. New Bridge Shoal	146	13	.40	750	375	
III. Pump House Shoal	286	13	.33	1,225	612	
IV. Tom's Bay Shoal	73	13	.66	625	313	
V. Between Tom's Bay and Perch Ditch	632	13	.36	2,675	1,338	
VI. Between Perch Ditch and Peterson's	565	13	.36	2,650	1,325	
VII. Between Peterson's and Phosphate	620	13	.50	4,050	2,025	
VIII. Between Phosphate and Store House	610	13	.70	5,550	2,875	
IX. Odessa Wharf Shoal	166	13	80	1,725	812	
Total	3,348	.....	.....	20,875	10,488	
I. Canal to be widened and deepened	450	13	4 to ⅔	14,000	6,300	45 cents per yard.
B. Canal	317	13	4	17,000	7,650	45 cents per cubic yard.
E. Canal (Drawyen)	250	13	4	14,000	6,300	
F. Canal (Tom's Bay)	670	13	4	36,000	16,200	
H. Canal (Bayard Ditch)	300	13	4	16,000	7,200	
K. Canals	160	13	4	8,320	3,744	
Total	1,697	.....	.....	91,320	41,094	

The material removed, which will consist mainly of mud, must be deposited on the banks of the creek.

THE ENTRANCE.

The distance from the entrance to 8 feet water in the Delaware Bay is 3,500 feet, with an average depth of 2½ feet at low-water.

To dredge a channel 75 feet wide and 7 feet deep across the shoal will require the removal of 45,000 cubic yards of material at a probable cost of 30 cents per yard, amounting to $13,500.

The bottom seems to be soft mud on the surface, with probably some clay and sand underneath. At this point a close survey would be required before any improvements were commenced.

TIDES.

The mean rise and fall at entrance, 6.00 feet; the mean rise and fall at Odessa, 4.70 feet. Difference in time between high water at Odessa and entrance, 2 hours 15 minutes.

This creek is in the collection district of Delaware; Saint Augustine Range Lights are the nearest light houses, and Fort Delaware is the nearest fortification.

I attach hereto recapitulation of the improvements desired, and estimates on same. Also a carefully compiled statement of the trade passing up and down the creek from March 15 to December 1, 1880, which has been very kindly furnished by Mr. Columbus Watkins, of Odessa, to whom I am also much indebted for facilities furnished during the examination.

Very respectfully, your obedient servant,

W. S. EDWARDS,
Assistant Engineer.

Col. J. N. MACOMB,
Corps of Engineers, U. S. A.

Recapitulation of improvements and estimates.

	Amount to be removed.	Cost per cubic yard.	Whole cost.
	Cubic yards.		
Dredging shoals	20,875	$0 50	$10,488 00
Widening canal	14,000	45	6,300 00
Canals	91,320	45	41,094 00
Entrance	45,000	30	13,500 00
Totals	171,195		71,382 00

STATEMENT SHOWING THE NUMBER OF BOATS OF ALL CLASSES THAT PASSED IN AND OUT OF THE APPOQUINIMINK CREEK FROM MARCH 15 TO DECEMBER 1, 1880, AND ALSO THE ESTIMATED TONNAGE, AND VALUE OF THEIR CARGOES.

Barges, 200 to 250 tons		210
Schooners, 35 to 60 tons		56
Schooners, 150 tons		2
Sloops, 30 to 50 tons		34
Boats, 5 to 10 tons		60
Steam tugs		244
Steamers, 120 tons		4
Steamer Clio, 96 feet long, 22 feet beam; times in and out		172
Coal	tons	3,000
Fertilizers	do	3,800
Hay and straw	do	500
Sugar beets	do	450
Grain	bushels	120,000
Lime	do	110,000
Fruit	baskets	280,000
Truck	do	35,000
Evaporated fruit	pounds	250,000
Grapes	do	400,000
Berries	quarts	110,000
Value stock		$60,000
Value butter, eggs, poultry, &c		30,000

Value building material	$35,000
Value agricultural implements	5,000
Value merchandise	275,000
Number of passengers	2,500

EXAMINATION OF SAINT JONES'S CREEK, IN KENT COUNTY, DELAWARE.

UNITED STATES ENGINEER OFFICE,
Philadelphia, Pa., December 31, 1880.

GENERAL: I have the honor to forward herewith report and tracing of chart of Saint Jones's Creek, Delaware, in accordance with section 2 of the river and harbor act of June 14, 1880.

Dover, the capital of Delaware, lies at the head of navigation of the creek, 21 miles from the mouth. Thence to Lebanon, a distance of 9 miles, a 5-foot low-water navigation is interrupted by shoals, aggregating some 16,000 feet in length, and requiring the dredging of about 50,000 cubic yards to remove them.

From Lebanon to the mouth is 12 miles. The obstructions to a 6-foot low-water navigation in this distance cover about 2 miles in all, and require the dredging of about 33,000 cubic yards.

The upper section of the stream passes principally through an agricultural region, and is tolerably straight, but the lower section traverses salt meadows, and possesses the tortuous character of streams so situated. These deep sinuosities interfere greatly with navigation, and suggest the desirability of cut-offs, which have in some cases been already made. The making of others is urged by those interested, and estimated for in the report, with an aggregate length of a little over one mile. The saving of distance to be effected thereby is about $4\frac{1}{2}$ miles.

Like nearly all the streams discharging into Delaware Bay from the westward, the depth at the entrance is limited by shoal water, extending broadly into the bay. The distance from the mouth to the 7-foot curve is about 2,400 yards, which is an average depth of only $2\frac{1}{2}$ feet.

The construction of a channel through these shoals would be costly, and the nature of the bed is such as not to encourage anticipation of permanency.

Very respectfully, your obedient servant,

J. N. MACOMB,
Colonel of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. W. S. EDWARDS, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Philadelphia, Pa., November 20, 1880.

COLONEL: I herewith respectfully submit report and map containing results of the examination of Saint Jones's Creek, Delaware.

The object of the examination was to determine the character and probable cost of the improvements desired, by a reconnaissance on which to found an approximate estimate.

Saint Jones's Creek is a tidal stream, about 40 miles in length, rising in the western part of Delaware and emptying into Delaware Bay 75 miles below Philadelphia. It drains an area of about 55 square miles, nearly all of which are rich agricultural lands and highly cultivated. The products find markets in Philadelphia and New York by means of the small vessels navigating the stream. Dover, the capital of the State, and a city of 2,500 inhabitants, lies at the head of navigation, about 21 miles above the

mouth. The creek is 60 feet wide at Dover and 115 at the mouth, with an average width of 75 feet. It is navigable at high-water for vessels of 6-feet draught to Lebanon—12 miles above the entrance—a place of 500 population, and at present the principal shipping point. Thence to Dover—9 miles—but 5 feet can be carried at high-water. There is a draw-bridge at Florence Landing, 7½ miles from the mouth, and another at Lebanon. These draws have openings of 34½ feet each. Two permanent stone bridges cross the creek at Dover.

There is given below a list of exports and imports for the last year; also, number and tonnage of vessels engaged in traffic in and out, which it is claimed would be much increased by the removal of obstructions to navigation.

For convenience of reference in this report, the creek is divided into two sections.

1st. From Dover to Lebanon; 9 miles.

2d. From Lebanon to entrance; 12 miles.

In the first or upper section, the improvement asked for consists of dredging out shoal places so that 5 feet at low-water can be carried from the wharf at Dover to the Lebanon wharves. These shoal spots are mostly at points where the fast land comes down to the creek, and have been formed by the washing down of the bluffs, and consist of gravel and clay, mixed with mud deposit. The material removed can in most instances be placed on the banks of the creek.

There is altogether a distance of 16,000 feet where, to make 5 feet at low-water and 40 feet in width, or 2 cuts of a dredge, will require an average deepening of 2 feet, or the removal of about 50,000 cubic yards of material. This ought to give a channel from Dover to Lebanon sufficient for towing vessels up and down. The rise and fall of tide at Dover averages about 14 inches, and at Lebanon about 2.5 feet.

SECOND SECTION, FROM LEBANON TO THE ENTRANCE; 12 MILES.

In this section both the dredging of shoals and the cutting of canals to straighten and shorten the navigation are asked for. I give below, in a tabulated form, the names of shoals examined, their present depths, and estimated dredging to make a channel of 6 feet depth and 40 feet width.

Name of shoal.	Depth.	Length.	Bottom.	Amount to be excavated.	Cost at 50 cents per cubic yard.	Remarks.
	Feet.	*Feet.*		*Cub. yds.*		
Pickering's Gravel	4	475	Hard	1,500	$750 00	The price is estimated at 50 cents per yard, being 45 cents for dredging and 10 per cent. additional for contingencies, supervision, &c.
James Island	3½	400	..do	1,500	750 00	
Phosphate Mill	4	600	Sticky	2,000	1,000 00	
White Store	3½	1,000	Gravel	4,000	2,000 00	
Red Granary	4	800	..do	2,500	1,250 00	
Heverin	4	200	..do	600	300 00	
Logan's Landing	4	800	..do	2,400	1,200 00	
Jack's Point	3½	600	Sand	2,300	1,150 00	
Warren's Landing	4	700	Gravel	2,200	1,100 00	
Oyster Rocks	4½	5,000	Hard	14,000	7,000 00	
Totals	.....	10,575	.....	33,000	16,500 00	

The canals desired are—

Name.	Length.	Width.	Depth.	Amount to be excavated.	Cost at 45 cents per yard.	Remarks.
	Feet.	*Feet.*	*Feet.*	*Cub. yds.*		
I. Wharton's Fishery	480	40	10½	8,000	$3,600 00	The cut of 10½ feet below surface of marsh will give 6 feet at low-water.
II. Cherry Tree	420	40	10½	7,000	3,150 00	
III. Heverin	900	40	10½	15,000	6,750 00	
IV. Logan's Landing	540	40	9½	8,000	3,600 00	
V. Jack's Point	3,240	40	9½	45,000	20,250 00	
Totals	5,580	.....	.....	83,000	37,350 00	

The canals are all through stiff marsh.

THE ENTRANCE.

The distance from the mouth of the creek to 7 feet water in the Delaware Bay is 2 400 yards, with an average depth of 2½ feet, shoaling up in places to 14 inches at

low-water. To dredge a 6-foot channel, 75 feet wide, across this flat would require the removal of 90,000 cubic yards of material, at a probable cost of 30 cents per yard, which would amount to $27,000. The material, as far as I was able to judge, is mud, sand, and clay. During the time I was at the mouth of the creek, the weather was so bad that it was impossible to make a thorough examination.

TIDES.

	Feet.
Mean rise and fall at entrance	5.00
Mean rise and fall at Dover	1.20

Difference in time between high-water at Dover and at entrance, 4 hours 30 minutes. These tides are deduced from 4 days' observations.

Saint Jones's Creek is in the collection district of Delaware. Mahon's River Light is the nearest light-house, and Fort Delaware is the nearest fortification.

I herewith attach a recapitulation of improvements desired, and estimates on same, based on the best information I was able to obtain, and personal examination and measurements. Also, statistics of commerce passing in and out of creek during past year, with size and draught of vessels employed, which have been very kindly furnished by Captain J. C. Durborrow, of Lebanon, whose vessels do most of the freighting business on the creek.

RECAPITULATION.

Name.	Amount to be removed.	Cost per cubic yard.	Whole cost.
	Yards.		
Upper Saint Jones	50,000	$0 50	$25,000
Lower Saint Jones, shoals	33,000	50	16,500
canals	83,000	45	37,350
Entrance	90,000	30	27,000
Total	.....	.....	105,850

STATISTICS OF COMMERCE PASSING UP AND DOWN SAINT JONES'S CREEK, 1880.

Exports.

Grain	bushels..	150,000
Wood	cords....	200
Phosphate	tons.....	1,000
Salt hay	tons.....	100
Canned fruits	tons.....	4,670
Peaches	baskets..	50,000

Imports.

Merchandise	value..	$20,000
Coal	tons...	1,000

There are now trading on the creek 3 vessels of 125 to 150 tons, of 6-feet draught; 5 vessels of 30 to 125 tons, of 5-feet draught; 1 steam-tug, 20 tons, of 4-feet draught.

Very respectfully, your obedient servant,

W. S. EDWARDS,
Assistant Engineer.

Col. J. N. MACOMB,
Corps of Engineers, U. S. A.

EXAMINATION OF LITTLE CREEK, IN KENT COUNTY, DELAWARE.

UNITED STATES ENGINEER'S OFFICE,
Philadelphia, Pa., December 31, 1880.

SIR: I have the honor to forward herewith a report and tracing of chart of Little Creek, Delaware, in accordance with section 2 of river and harbor act of June 14, 1880.

The navigation is about 3½ miles in length, terminating at Little Creek Landing.

The improvement estimated for is to obtain 6 feet at low-water. The shoals with less depth than this aggregate about one mile, and their removal involves dredging about 17,000 cubic yards.

Some of the bends in the stream, especially that below Taylor's Gut, are so sharp as to interfere with the navigation, particularly of steam vessels. The cut-offs given in the report are desired by those interested.

The entrance offers difficulties similar to those existing at other points. The distance from the mouth to 7 feet at low-water in the bay is about 1,500 yards across shoals of sand and mud, with 3 feet of water over them. The greater rise of tide at the mouth in great degree compensates for this, and the removal of the shoals in the creek itself is the great desideratum.

Very respectfully, your obedient servant,

J. N. MACOMB,
Colonel of Engineers.

To the CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. W. S. EDWARDS, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Philadelphia, Pa., December 10, 1880.

COLONEL: I respectfully submit report of examination of Little Creek, Delaware, with approximate estimates for desired improvements and map of creek showing same.

Little Creek is situated in Kent County, Delaware; is a narrow tidal stream, about 8 miles in length, bordered by salt marsh as far up as the Landing, which is the head of navigation, 3½ miles from the mouth. It has a width of 180 feet at its mouth and 30 feet at the Landing, with an average width of 70 feet. It empties into the Delaware Bay 70 miles below Philadelphia, and 1½ miles south of Mahon's River Light-house. Small vessels of 5½ feet draft are now able to go up to the Landing at high-water, and during the peach season there are 3 steamers running there, one to New York and two to Philadelphia. There are no bridges crossing the creek below the Landing; there is one at the Landing above the wharves with a draw of 34½ feet opening. The creek drains an area of about 25 square miles. The Landing is a small town of about 200 inhabitants, who are chiefly engaged in the oyster trade. It has a post-office, and is 5 miles from Dover, the nearest railroad station.

The improvements desired consist of deepening across some shoals in the creek and four short canals cut at sharp bends, so that vessels of greater length can come up to the Landing. No improvement of the entrance is asked for, but it was examined. From the entrance to 7 feet water in the bay is a distance of 1,500 yards, and the greater part of that distance is across a shoal or bar of soft mud with only 3 feet on it.

I have made estimates for a channel of 6 feet depth at low-water from the mouth of the creek up to the Landing with a width at the shoal places of 40 feet, or about two cuts of an ordinary dredge-boat. The localities at which dredging will be required are:

Name.	Length.	Width.	Depth.	Cubic yards.	Cost.	Remarks.
	Feet.	*Feet.*	*Feet.*			
Landing Shoal	600	40	2	2,000	$1,000	Estimated at 50 cents per yard.
Long Beach Shoal	650	40	2	2,200	1,100	
Shoal spots from Long Beach to Straight Ditch	1,000	40	2	3,400	1,700	
Lower Shoal	450	40	2	1,400	700	
Between Lower Shoal Canal and Taylor's Gut	600	40	2	2,000	1,000	
From Taylor's Gut to Cross Cut	100	40	2	300	150	
From Cross Cut to Double Gut Shoal	350	40	2	1,040	525	
Double Gut Shoal	1,500	40	2	4,500	2,250	
Total	5,250	.....	.....	16,850	8,425	

All the material removed at these points can be deposited on the banks of the creek, except at Double Gut Shoal, where scows could be used to advantage and dumped in the bay, as the creek is wide, and to place it on the bank would require the material to be handled twice.

The canals are as follows:

Name.	Length.	Width.	Depth.	Cubic yards.	Cost.	Remarks.
	Feet.	*Feet.*	*Feet.*			
Flat Iron	350	50	12	8,000	$3,600 00	Estimated at 45c. per yard.
Duncheon Gut	130	50	12	3,000	1,350 00	
Lower Shoal	200	50	12	4,500	2,025 00	
Taylor's Gut	160	50	12	4,500	1,800 00	
Totals	840			19,500	8,775 00	

TIDES.

	Feet.
Mean rise and fall at entrance	5.00
Mean rise and fall at Landing	3.20

Difference in time between high-water at Landing and entrance, 1 hour 10 minutes.

These tides are from only two days' observations.

This creek is in the collection district of Delaware. Mahon's River Light is the nearest light-house, and Fort Delaware is the nearest fortification.

The appended statistics of the trade passing up and down the creek during the greater part of the year 1880, were very kindly furnished by Mr. McGonegal, a merchant of Little Creek Landing.

At present there are no factories at Little Creek Landing. In case the improvements are carried out the erection of a large canning and fruit-drying factory is cone templated; that section of country being remarkably well adapted for the production of fruits and vegetables. The statistics of the oyster trade I could not obtain, owing to the vessels using Mahon's River as a harbor, although the vessels are all partly owned by citizens of the Landing, and also manned by them. There are about 20 oyster boats, ranging from 30 to 100 tons, each partially owned in this place.

Very respectfully, your obedient servant,

W. S. EDWARDS,
Assistant Engineer.

Col. J. N. MACOMB,
Corps of Engineers, U. S. A.

Recapitulation of improvements asked for on Little Creek, Delaware.

	Cubic yards.	Cost.	Remarks.
Dredging to give 6 feet in channel	16,850	$8,425 00	Estimated at 50c. per yard.
Canals	19,500	8,775 00	Estimated at 45c. per yard.
Totals	36,350	17,200 00	

STATISTICS OF COMMERCE PASSING UP AND DOWN LITTLE CREEK, DELAWARE, DURING 1880.

Exports.

Grain	bushels	200,000
Wood	cords	100
Peaches	baskets	30,000
Hay	tons	400
Canned fruits	cases	400,000

Imports.

Coal	tons	200
Lime	bushels	30,000
Merchandise	value	$20,000
Phosphates	tons	300
Rails		6,000

Three schooners, 80 to 120 tons, running regularly. Three steamers running during peach season.

Steamer to New York would be continued during whole year if creek was improved.

SURVEY OF CHRISTIANA RIVER, DELAWARE, FROM THE DELAWARE RAILROAD BRIDGE TO THE MOUTH OF THE RIVER.

UNITED STATES ENGINEER OFFICE,
Philadelphia, Pa., January 7, 1881.

GENERAL: I have the honor to forward herewith report and tracings of chart of Christiana River, Delaware, in conformity with the requirements of the river and harbor act of June 14, 1880.

The improvement of Christiana River, which constitutes the harbor of Wilmington, has been in progress since 1871, under the project adopted at that time, and carried to its completion during the past season by the expenditure of the $10,000 appropriated in the last river and harbor act.

This project called for a 12-foot low-water navigation, of between 100 and 200 feet width, to be secured by dredging and blasting, at an estimated cost of $83,000. The amount that has been appropriated and expended is $83,500, and the chart shows that the full object of the expenditure has been attained. The condition of the navigation, somewhat in detail, is as follows:

There is a clear depth of 13 feet at the entrance, with a width between the 12-foot curves of from 100 to 200 feet. Near the rolling-mill wharf, about 5,000 feet above the mouth, the channel deepens to 18 and 20 feet. Between this point and the mouth of the Brandywine, 4,000 feet, the 12-foot channel averages 125 feet in width, with maximum depths of 15 and 16 feet. Between Brandywine and Third street bridge, 3,500 feet, the greater portion of the channel exceeds 15 feet in depth. Ledges of rock exist above and below Third street bridge, and numerous borings were made in the vicinity to ascertain its development. Between Third street and Market street bridges, 4,000 feet, covering the main city front of Wilmington, the 12-foot navigation continues with a reduced width, averaging about 50 feet, and the 15-foot low-water depth occupies about one-fourth of the distance. Between Market street and the Delaware Western Railroad bridges, 2,500 feet, the 12-foot channel increases in both dimensions, with numerous soundings of over 20 feet, and an average width of 100 feet. The improvements hitherto made have terminated just above Market street. At the Delaware Western Railroad bridge the 12-foot curve disappears from the chart. The soundings thereon to the Pulp Works, 2,400 feet, are from 9 to 11 feet, and thence to the Delaware Railroad bridge, 7,500 feet, the depth remains about the same, with the exception of a distance of about 2,000 feet in the straight reach below Dupont's powder wharf, over which the average low-water depth is 4 to 5 feet. The low-water width of Christiana River is quite uniformly about 300 feet from the Delaware Railroad bridge to the junction with the Brandywine; thence to the mouth it is about 500 feet. The mean range of tide is also uniform within the limits of the survey, 5½ miles, varying from 5.7 feet at the buoy depot, near the entrance, to 5 8 feet at the upper bridge. This uniformity, both in cross-section and tidal range, indicates conditions quite favorable to stability for any further improvement, if not impaired by faulty works.

There is every reason to suppose that a 15-foot low-water navigation, as called for by the river and harbor act, can be secured and maintained, if the proper precautions are taken.

The only point naturally presenting difficulties is the entrance, where the ordinary depth is 8 or 9 feet, and the greater draught could not be

maintained without constant dredging in the absence of permanent works. The construction of the deflecting jetty shown on the tracing, would in all probability suffice to maintain an entrance depth of not less than 12 feet, after the necessary dredging had been done, by protecting the ebb current of the Christiana against interference from that in the Delaware before attaining its proper direction, and by tending to gather the flood current without the creation of cross-currents.

As this jetty will have to sustain a considerable pressure of ice at certain seasons, it must be made of sufficient strength, and the outer end should be made especially solid to insure its ability to carry a beacon to mark the entrance. To reduce the cost without impairing the efficiency in any marked degree, the height of the jetty may be kept below that of high-water.

The borings in the vicinity of the rock ledges near Third street bridge prove that the amount of that material to be excavated for a 15-foot channel is fortunately small. The estimate of cost given in the accompanying table separates the river into six sections, lettered respectively from A to F, with channel dimensions diminishing upward. In the lowest section the 15-foot channel has a width of 150 feet. In the next three sections the width is reduced to 100 feet, increasing at the Third and Market street bridges, to allow for the use of both draws, to 150 and 200 feet. Between the Delaware and Western Railroad bridge and the Pulp Works the channel width is 75 feet, and thence upward to Delaware Railroad bridge, 50 feet, the depth being uniform.

The Pulp Works mark the present limit of extensive works dependent largely upon water freights. Should that point be made also the present limit for the 15-foot channel, the depth of 12 feet thence to the upper railroad bridge would probably meet all immediate requirements, and effect a considerable saving in the total estimate.

Should sufficient appropriation be made, I would recommend that the works be executed in the following order:

1. The extension of the present 12-foot channel upward to the Pulp Works;
2. The construction of the jetty at the mouth;
3. The dredging of the 15-foot channel from the mouth upward; and
4. The removal of the rock above Third street.

For the completion or the entire project, a period of about four years would probably be required. The division of labor would not necessarily follow the above divisions, which are only intended to indicate the sequence of work, and not the annual amount.

An undue protraction of time would increase the ultimate cost of the project.

In regard to the probable future cost of maintenance of the projected 15-foot low-water navigation, it is proper to say that all the indications are favorable, with the exception that at the present time no suitable regulations exist for controlling the deposit of solid materials in the stream.

The drainage and sewerage system of the city of Wilmington are of the most primitive character. The city lies on a sloping site, the streets are imperfectly paved, and the washings of all sorts find their way into the Christiana River, without any provision whatever for intercepting their solid contents and preventing them from filling the river bed. To this cause is due the marked deterioration of the navigation between the Third and Market street bridges which exists, notwithstanding the expenditure by the general government and the constant annual outlay

by owners of wharf property. Unless this evil can be remedied and the navigation relieved of the great and unnecessary burden thereby thrown upon it, the estimates accompanying this report must be largely increased, and the ultimate maintenance of the improved, or even of the existing navigation rendered costly and uncertain.

Very respectfully, your obedient servant,

J. N. MACOMB,
Colonel of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

Estimate of cost of constructing a channel 15 *feet deep at mean low-water in Christiana River, Delaware, from mouth to Delaware Railroad bridge.*

SCHEDULE I.—DREDGING.

Sections.	Localities. From—	Localities. To—	Dimensions of channel. Width.	Dimensions of channel. Depth.	Dredging.	Nature of material.	Price per cubic yard.	Cost.	Remarks.
			Feet.	*Feet.*	*Cub. yds.*		*Cents.*		
A	Mouth	Rolling-mill wharf	150	15	38,400	Mud and sand	28	$10,752	The proposed channel widens at Third street bridge from 100 to 150 and 200 feet, and at Market street bridge from 100 to 150 feet. Allowances made for channel slopes, varying from $\frac{1}{3}$ to $\frac{1}{6}$.
B	Rolling-mill wharf	Third-street bridge	100	15	69,800	Mud and gravel	30	20,940	
C	Third-street bridge	Market-street bridge	100	15	73,200	do	32	23,424	
D	Market-street bridge	Delaware Western Railroad bridge	100	15	24,300	do	35	8,505	
E	Delaware Western Railroad bridge	Pulp works	75	15	84,800	do	35	29,680	
F	Pulp works	Delaware Railroad bridge	50	15	190,200	do	35	66,570	
	Totals				480,700			159,871	
								31,150	
	NOTE.—If Section F be made with a depth of 12 feet instead of 15 feet, a reduction of 89,000 cubic yards can be made from the above, reducing the cost by $31,150, and the total cost would be							128,721	

SCHEDULE II.—ROCK EXCAVATION.

Locality.	Width.	Depth.	No. cubic yards.	Nature of material.	Price.	Cost.
In mid-channel 600 feet above Third street bridge	100 feet.	15 feet.	438	Hornblendic gneiss	$35 00	$15,330

SCHEDULE III.—CONSTRUCTION OF JETTY AT MOUTH.

Locality.	Length.	Average height.	Price per running foot.	Cost.
From dike at light-house to 15-foot curve in Delaware River	1,800 feet.	12 feet.	$17 50	$31,500

RECAPITULATION.

Dredging	$159,871
Rock excavation	15,330
Construction of jetty	31,500
Total	206,701
If Section F be made with a depth of 12 feet instead of 15 feet, the total cost would be	175,551

Table of distances between prominent points along the Christiana River from the mouth (15-foot curve in Delaware River) to Delaware Railroad bridge.

Localities.	Distances in feet.	Total distance from mouth in feet.
Mouth (15-foot curve Delaware River)	.....	.....
Buoy Depot wharf (tide-gauge)	2,150	2,150
Rolling-mill wharf	2,600	4,750
Upper Wharf National Dredging Company (tide-gauge)	2,650	7,400
Mouth of Brandywine	1,200	8,600
Third-street bridge	3,500	12,100
Market-street bridge (tide-gauge)	3,900	16,000
Delaware Western Railroad bridge	2,350	18,350
Pulp works	2,400	20,750
Delaware Railroad bridge (tide-gauge)	7,600	28,350

COMMERCIAL STATISTICS.

Number of vessels regularly engaged in the commerce of Christiana River during the year 1880.

Schooners, 1,418; sloops, 1,280; barges, 3,002; steamers, 1,410.
Draught of vessels, 8 to 16 feet.

Cargoes.	Tonnage.	Value.
Coal	122,906	$571,065
Lumber	20,250	272,000
Iron	35,000	1,470,000
Lime	150	600
Saltpeter and potash	1,562	156,200
Fire-bricks	50	375
Bricks	4,000	12,000
Ice	6,000	24,000
Sand	5,000	5,000
Wood	.....	75,000
Meal	7,500	325,000
Flour	100	8,000
Wheat	3,000	105,000
Corn	14,000	250,000
General merchandise	50,000	7,500,000
Fertilizers	31,000	775,000
Paper and paper material	13,500	1,890,000
	314,018	13,439,240

Number of vessels built during the year	26
Value of vessels built during the year	$1,430,000
Number of vessels repaired during the year	136
Cost of repairs	$400,000

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. No. 35.

DISBURSEMENTS IN STATE DEPARTMENT.

LETTER

FROM

THE SECRETARY OF STATE,

TRANSMITTING

Statements of all moneys disbursed by the department.

JANUARY 13, 1881.—Referred to the Committee on Expenditures in the State Department, and ordered to be printed.

DEPARTMENT OF STATE,
Washington, January 10, 1881.

The Secretary of State, in pursuance of the requirements of sections 193 and 209 of the Revised Statutes, has the honor to submit to Congress the following statements, viz:

A.—A detailed statement of the manner in which the contingent fund for the Department of State for the year ending June 30, 1880, has been expended;

B.—A statement of the expenditures from the contingent fund for the expenses of foreign intercourse, including the contingent fund for the expense of all the missions abroad, for the year ending June 30, 1880, with the balances of all former appropriations in each case on hand in the Treasury Department and in the hands of the disbursing clerk of the Department of State; and

C.—Being a precise analytical statement of all moneys disbursed by the disbursing clerk of this department, during the fiscal year ending June 30, 1880.

WM. M. EVARTS,

Hon. SAMUEL J. RANDALL,
Speaker of the House of Representatives.

A.—*Giving a detailed statement of the manner in which the contingent fund for the Department of State for the year ending June* 30, 1880, *has been expended.*

To whom paid.	On what account.	Amount.
Washington Gas Light Company	Gas in July	$135 23
Washington and Georgetown Railroad Company.	Car tickets	15 00
Hooe Bros. & Co	Flannel	1 50
Charles Moulton	Cartage	1 00

A.—*Statement, &c.*—Continued.

To whom paid.	On what account.	Amount.
E. W. Bullinger	Monitor Guide	$6 00
Stephen McCarthy	Hauling boxes	1 00
Elizabeth H. Brown	Washing towels	25 00
Barker Bros	Ice in July	53 88
William Callow	New York papers	24 00
E. K. Lundy	Newspapers	5 90
John McDermott & Bros	Repairs to carriage and wagons	35 60
Murray & Barker	Shoeing horses	12 25
B. Koch	Repairing harness	19 40
Joseph McGraw	Painting	38 00
C. W. Drury	....do	34 00
J. D. Townley	Plumbing	55 60
William H. Dice	Sundry repairs	17 75
John A. Baker	Grass-mower	20 75
Daily Critic	Advertising proposals	4 10
National Republican	....do	4 50
Stephen E. McCarthy	Removing ashes	4 00
Washington Gas Light Company	Gas consumed in August	119 93
Penrose Thomas	Brass polish	1 00
William Beaman	Brooms	4 00
Washington and Georgetown Railroad Company.	Car tickets	5 00
H. Baumgarten	Blotter-bath	3 50
Barker Bros, Kennebec Ice Company	Ice in August	53 76
Western Union Telegraph Company	Telegrams	9 93
Elizabeth H. Brown	Washing towels	25 00
William Callow	New York papers	24 00
E. K. Lundy	....do	5 90
J. R. Thomas	Hay	12 36
Murray & Barker	Shoeing horses	9 25
B. Koch	Repairing harness	6 65
William H. Dice	Repairing stable fence	3 50
W. T. Dewdney	Paving	51 32
Joseph McGraw	Painting	54 30
Charles W. Drury	....do	54 00
J. T. Townley	Repairing, plumbing, &c	55 60
W. H. Dice	Sundry repairs	12 00
Ford & Bros	Red brick	20 00
John B. Lord	Sand	5 50
Washington and Georgetown Railroad Company.	Car tickets	15 00
C. Carroll	Drayage	1 00
A. T. Stewart & Co	Toweling	28 78
Gazette Printing Company	Subscription	6 00
B. W. Reed's Sons	Coaline	11 50
E. L. Godkin & Co	Subscription to Nation	5 20
John W. Drew	Carbolic acid, &c	9 65
E. K. Lundy	Newspapers	5 90
Elizabeth H. Brown	Washing towels	25 00
J. F. Mann	Washington Post, two copies	3 00
William Callow	New York papers	24 10
Barker Bros	Ice	51 84
Charles Rogers	Sawing wood	7 50
Stephen E. McCarthy	Removing ashes	4 00
Washington Gas Light Company	Gas in September	139 73
Peter Schench	Pasture, &c., horses	15 50
John W. Drew	Castile soap	8 88
Murray & Barker	Shoeing horses	12 00
William H. Dice	Making gutter-bridge, stable	4 50
William M. Galt	Horse feed	83 38
Hayward & Hutchinson	Zinc and fire clay	6 25
Joseph McGraw	Painting	18 00
J. G. & M. Waters	Cement furnished	3 15
William H. Dice	Repairs and material	12 00
L. W. Guinand	Coal and wood	195 00
Do	Hickory wood	94 87
Charles Rogers	Sawing wood	29 75
Stephen E. McCarthy	Removing ashes, &c	4 00
Washington Gas Light Company	For gas consumed in October	151 65
William Smith	Official cards	10 00
Washington and Georgetown Railroad Company.	Car tickets	15 00
S. B. McCarty	Hauling boxes	1 50
William Beaman	Two dozen brooms	8 00
Western Union Telegraph Company	Telegrams	15 23
Frank Shepard	Book labels	23 00
William Groin	Traveling expenses, public business	18 65
Barker Bros, Kennebec Ice Company	Ice for October	59 52
Elizabeth H. Brown	Washing towels	25 00
William Callow	New York newspapers, one month	24 20
E. K. Lundy	....do	5 90

A.—*Statement, &c.*—Continued.

To whom paid.	On what account.	Amount.
J. D. Townley	Plumbing in September	$53 80
Bartlett, Robbins & Co	Repairing boiler	7 60
Sinclair & Aschenbach	Supplies for boiler	7 00
J. D. Townley	Services in October	55 60
J. R. Thomas	Hay	14 90
Charles Mostan	Whitewashing stable	5 00
J. R. Thomas	Hay	17 50
T. J. Hardesty	Straw	15 97
Mrs. W. H. Godey	Lime	1 00
B. Koch	Repairing harness, &c	10 65
Murray & Barker	Horseshoeing	9 00
L. William Guinand	Wood	32 50
Charles Rogers	Sawing wood	15 00
Stephen E. McCarthy	Removing ashes	6 00
Washington Gas Light Company	Gas consumed in November	202 28
William H. Dice	Taking down awnings	15 00
Penrose Thomas	Polish balls	1 00
Washington and Georgetown Railroad Company	Car tickets	15 00
Theodore F. Dwight	Traveling expenses, public business	40 00
William F. Lutz	Stamp ribbon	3 94
Barker Bros	Ice for November	57 60
Elizabeth H. Brown	Washing towels	25 00
William Callow	New York newspapers	24 20
E. K. Lundy	....do	5 90
William H. Dice	Repairing furniture, &c	54 28
Charles W. Drury	Painting in department	24 00
Joseph McGraw	....do	42 00
Pay roll	Mechanics in department	51 37
J. D. Townley	Services, plumbing	53 80
William H. Dice	Repairs to stable	55 40
B. Koch	Repairing harness	22 00
Murray & Barker	Shoeing horses	8 50
M. Mareau	Battery material	30 80
George Wohlfroth	Labor on grounds	5 00
L. William Guinand	Coal	309 03
S. E. McCarthy	Removing ashes	6 00
J. W. Boteler & Bro	Matches, candles, &c	50 20
Washington Gas Light Company	Gas consumed in December	194 18
James Von Lear	Binders	15 00
George W. Knox	Cartage to depot	19 00
F. Schneider & Son	Supplies	5 18
Western Union Telegraph Company	Telegrams	9 11
James L. Harmon	Baltimore Sun	6 60
Kennebec Ice Company	Ice for December	44 64
Elizabeth H. Brown	Washing towels	25 00
J. W. Boteler & Bro	Brushes, &c	40 20
William Callow	New York papers	25 85
E. K. Lundy	....do	5 90
William H. Dice	Sundry repairs and materials	20 05
F. Schneider & Son	Supplies	21 86
C. Schneider	Repairs to elevator	2 50
Thomas Somerville	Repairs to boilers	45 44
Sinclair & Aschenbach	Stuffing box for steam pump	5 50
J. D. Townley	Services, plumbing; December	55 60
T. Tuomy	Mantel top slip	4 00
William H. Dice	Sundry repairs and material	131 35
William Purcell	Mason work	60 00
B. F. Brissey	Mason work helper	25 00
William H. Dice	Labor and material, stable	59 40
F. Schneider & Son	Pitchfork and wrench	2 10
William M. Galt & Co	Horse feed	97 49
Lutz & Bro	Rubber coat and hat cover	8 00
Murray & Barker	Horseshoeing	15 00
William H. Dice	Sundry repairs for stable, &c	9 00
B. Koch	Repairing harness, &c	18 95
William McKenzie	Manure for grounds	33 75
W. W. Farr	Repairing and winding clocks	48 00
National Republican	Twelve copies for one year	36 00
Washington and Georgetown Railroad Company.	Car tickets	15 00
Evening Star	Advertising stationery	6 75
J. F. Mann	Two copies Washington Post	3 00
William C. Bryant & Co	Subscription one year	9 00
William H. Boyd	Washington Directory, two copies	10 00
Penrose Thomas	Silver polish	1 00
John W. Drew	Supplies, sponges, &c	53 45
William Callow	New York papers	18 55
William F. Lutz	Stamp Ribbons	2 25
Barker Bros., Kennebec Ice Company	Ice for January	44 64
Elizabeth H. Brown	Washing towels	25 00

A.—*Statement, &c.*—Continued.

To whom paid.	On what account.	Amount.
E. K. Lundy	New York papers	$5 90
J. McDermott & Bros	Repairing carriages, &c	6 25
William S. Thompson	Horse medicines, &c	8 00
John W. Drew	Castor oil	2 55
Murray & Barker	Horseshoeing	13 25
B. Koch	Repairing harness	19 25
William H. Dice	Repairing stable, &c	3 75
F. Schneider & Son	Materials, sundries	26 39
L. H. Schneider	Supplies	94 70
William H. Dice	Repairs and materials	57 50
J. D. Townley	Labor, plumbing, &c	56 20
Evening Star Company	Advertising proposals for fuel	6 38
Stephen E. McCarthy	Removing ashes	7 75
L. H. Schneider	Sperm oil	42 00
Washington Gas Light Company	Gas consumed in Januaay, 1880	162 20
National Capitol Telephone Company	Rent of telephones for year	46 00
George C. Maynard	....do	40 00
Do	Telephone bell and wire	20 00
L. William Guinand	Coal	370 74
Stephen E. McCarthy	Removing ashes	6 00
Washington Gas Light Company	Gas consumed in February	160 80
Samuel Queen	Hay	21 00
B. Koch	Repairing harness, &c	7 00
John W. Drew	Castile soap	32 00
Murray & Barker	Horseshoeing	15 38
Trunnell, Clark & Co	Towels	41 70
Mrs. C. F. Schmidt	Tape for towels	2 96
Barker Bros	Ice for February	41 75
William Callow	New York papers	19 80
Washington and Georgetown Railroad Company.	Car tickets	15 00
E. K. Lundy	New York papers	5 90
Elizabeth H. Brown	Washing towels	25 00
Boston Daily Advertiser	Subscription	12 00
Charles W. Drury	Door-plate lettering, &c	5 00
F. Schneider & Son	Hardware	45 14
Thomas Somerville	Supplies, engine, &c	35 17
William H. Dice	Sundry repairs	44 75
J. D. Townley	Services, plumbing, &c	52 60
C. W. Drury	Painting in department building	21 25
Stephen E. McCarthy	Removing ashes	6 00
Webb & Beveridge	Wax-tapers, &c	2 50
Washington Gas Light Company	Gas consumed in March	168 00
William F. Lutz	Penalty stamp	6 50
J. F. Mann	Two copies Daily Post	3 00
Elizabeth H. Brown	Washing towels	25 00
Barker Bros	Ice for March	44 64
William Callow	New York papers	19 50
E. K. Lundy	....do	5 90
William M. Galt & Co	Horse feed	87 12
Murray & Barker	Horseshoeing	10 50
B. Koch	Repairs to harness, &c	6 75
W. H. Dice	Repairs to stable	6 00
C. W. Drury	Lettering and painting	23 75
C. Schneider	Repairing elevator	4 50
F. Schneider & Son	Supplies	32 78
J. D. Townley	Services as plumber, &c	56 20
William H. Dice	Sundry repairs, materials, &c	24 25
Frank N. Moore	Services, &c	9 10
John McCarthy	Hire of roller	3 25
F. Schneider & Son	Shears, knife, and seed	3 88
Stephen E. McCarthy	Removing ashes	6 00
Washington and Georgetown Railroad Company.	Tickets	15 00
John McCarthy	Hauling statutes	2 00
R. J. Meigs	Copies of papers	15 05
Barker Bros., Ice Company	Ice for April	43 20
William Callow	New York newspapers	19 50
E. K. Lundy	....do	5 90
Elizabeth H. Brown	Washing towels	25 00
Western Union Telegraph Company	Telegrams	6 91
Mary Cruitt	Hire of horse	4 00
B. Koch	Repairing harness, &c	5 90
Murray & Barker	Shoeing horses	13 00
C. W. Drury	Services painting	6 25
Do	....do	2 50
J. D. Townley	Services as plumber, &c	54 40
Charles E. Kearney	Services in April	39 00
Nathaniel James, Jr	Exemplification in case of F. B. de Luna	2 09
Washington and Georgetown Railroad Company.	Car tickets	15 00

A.—*Statement, &c.*—Continued.

To whom paid.	On what account.	Amount.
W. B. Harveycutter	Services as telegraph operator in May	$1 66
George W. Knox	Freight on box from New York	6 35
Barker Bros., Kennebec Ice Company	Ice for month of May	61 92
Elizabeth H. Brown	Washing towels in May	25 00
William Callow	New York newspapers for May	19 80
William Beaman	Brooms	8 00
E. K. Lundy	New York newspapers for May	5 90
A. T. Stewart & Co	Toweling and muslin	35 27
H. J. Hart	Insect-powder and bellows	19 65
Hooe Bros. & Co	Linen thread	1 50
William Sorricks	Services cleaning carpets	13 50
John Hamilton	....do	15 00
Albert A. Ashe	....do	15 00
J. H. Magruder	Babbitt's soap	19 20
Stephen E. McCarthy	Hauling carpets for cleaning	10 00
William F. Lutz	Ribbon stamp	1 25
John W. Drew	Brooms, alcohol, insect-powder, &c	38 25
E. K. Lundy	New York newspapers for June	5 90
Barker Bros., Kennebec Ice Company	Ice for June	72 00
William Callow	New York newspapers for June	20 00
Elizabeth H. Brown	Washing towels, June	25 00
The Baltimore Sun	Newspaper for six months	6 60
Atlantic and Pacific Telegraph Company.	Telegrams	68
J. F. Mann	Copies Washington Post	3 00
F. Schneider & Son	Supplies (sundries)	32 73
Washington Gas Light Company	Gas furnished for April	156 60
Do	Gas furnished for May	126 40
J. W. Boteler & Bro	Candles, sweeps, matches, &c	95 35
Washington Gas Light Company	Gas furnished for June	103 00
Albert S. Lyons	Sawing and putting away wood	7 12
L. William Guinand	Stowing coal and wood	19 44
John McCarthy	Removing ashes	5 00
Do	Hauling ashes	3 00
C. Renshaw	Bill of hay for horses, Department of State	25 13
John McDermott & Bros	Repairing carriages	74 50
Murray & Barker	Shoeing horses	10 00
John Dugan	One dark brown horse	150 00
J. R. Thomas	Bill of hay	26 81
W. M. Galt	Bill horse feed for quarter	196 09
John W. Drew	Soap, oil, arnica, and saltpeter	13 00
Murray & Barker	Shoeing horses	10 50
B. Koch	Repairing harness, &c	28 00
W. H. Dice	Material and repairs	5 50
John McDermott & Bros	Repairing carriages, &c	66 75
William H. Dice	Repairs and materials for Department of State	89 25
Do	...do	37 25
Sinclair & Aschenbach	Repairs on steam pumps, &c	14 00
J. D. Townley	Services labor and plumber in May	56 20
Basshor & Stebbins	Steam-gauge for engine-room	20 00
Frank Scheer	Mason work and labor on basement of department building.	5 20
Washington Brick Machine Company	Bill of brick for department repairs	2 77
C. W. Drury	Services, painting in department building	67 50
W. H. Dice	Repairs and material in department in June	18 60
J. D. Townley	Services as plumber and laborer on repairs, June	54 40
John McCarthy	300 pots of flowers, assorted for grounds	12 00
Charles E. Kearney	Services, care of grounds in May	40 50
Russell Boyd	Services, care of grounds, &c., in April	54 40
Do	Services, care of grounds, &c., in May	56 20
W. W. Farr	Winding and care of clocks for half year	48 00
Charles E. Kearney	Services, care of grounds, &c., in June	39 00
Levi Loomis	....do	54 20
National Capitol Telephone Company	Rent of signal bell and telephone nine months	33 22
Royce & Mareau	Telegraphic and electric apparatus	46 80
Total expenditures during the fiscal year 1880		9, 629 87

R. C. MORGAN,
Disbursing Clerk, &c.

B.—*Statement of the expenditures from the fund for contingent expenses of foreign intercourse, including the expenditures for contingent expenses of all missions abroad, for the fiscal year ending June* 30, 1880, *at Department of State.*

To whom paid.	On what account.	Amount.
Radcliffe Baldwin, dispatch agent	Salary and disbursements (Appropriation for 1879)	$537 33
A. G. Menocal (agent Interoceanic Canal.	Traveling expenses, balance do	156 55
Western Union Telegraph Company	Cable telegrams do	251 20
Do	do do	5 85
James E. Thomson	Seals for mail-bags, &c do	108 25
William H. Dice	Packing-boxes, &c	56 95
William H. Trescot	Legal services, Venezuelan indemnity	250 00
Thomas C. Trescot	Traveling expenses, Fishery Commission	100 00
Western Union Telegraph Company	Cable telegrams	94 82
Do	Telegrams	26 38
Do	Cable telegrams	68 87
Herald Publishing Company, Halifax, N. S.	Subscription	6 00
William H. Trescot	Legal services, Venezuelan indemnity	250 00
William M. Evarts	Expenses to New York, two trips on public business, July and August.	96 00
J. F. Mann, Washington Post	Legation to Hayti	1 50
New York Tribune	For legation to Paris	16 26
New York Times	do	19 30
H. D. Bookman	Repairing mail-pouches	29 50
James J. Chapman	Stationery, &c	838 91
New York Tribune	For legation at Brussels	16 26
Western Union Telegraph Company	Cable telegrams	98 22
J. J. Chapman	Stationery	542 00
New York Times	For legation at Berne	19 30
New York Tribune	do	21 34
James J. Chapman	Stationery	450 45
Harper's Weekly	Subscription	4 24
President's Approval		500 00
William M. Evarts	Traveling expenses, public business	174 99
State of New York	Governor's certificate	1 00
New York Times	For legation at Hague	4 58
William H. Dice	Making packing-boxes, &c	26 75
United States Mail and District Express Company.	Freight on dispatch bag	1 25
New York Daily Tribune	For legation at Hague	16 26
Norris Peters	Photolithographing	20 00
James J. Chapman	Stationery	715 02
George F. Timms	Overcoat for mail clerk	20 00
New York Tribune	For legation at Stockholm	9 75
W. W. Edgecombe	Sundry expenses	214 08
Boston Daily Journal	For legation at Stockholm	8 75
Adams Express Company	Transportation charges, &c	40 15
Radcliffe Baldwin, dispatch agent, New York.	Salary and disbursements	561 65
New York State	Affixing seals	1 00
New York Herald	For legation at London	5 75
New York Times	For legation at Madrid	2 86
Harper & Bros., Harper's Weekly	For legation at London	2 12
Western Union Telegraph Company	Telegrams	41 67
Do	do	32 86
Do	do	60 99
Springfield Republican	For legation at Madrid	1 37
Bureau of Engraving and Printing	Printing passports	313 32
James J. Chapman	Stationery	190 90
Do	do	1,379 00
George W. Knox	Freight and charges	36 01
National Republican	Subscription for six copies	18 00
Walter H. McDaniels	Flags for legations	700 00
J. F. Mann, Washington Post	For legation to Hayti	1 50
New York Tribune	For legations at Tokio and Constantinople	11 69
James G. Bennett, New York Herald	For legation at Tokio	2 00
John W. Foster, minister, Mexico	Traveling expenses	123 50
Chicago Inter-Ocean	For legation at Constantinople	7 30
George W. Knox	Freight on books, &c	25 92
Western Union Telegraph Company	Telegrams	17 37
Do	Cable telegrams	257 07
Chicago Tribune	For legation to Chili, six months	6 00
New York Times	For legation to Chili, twelve months	13 20
William H. Trescot	Legal services, Halifax fishery award	250 00
W. M. Shuster & Sons	Cotton cloth	4 35
James J. Chapman	Stationery	196 25
John Lockie	Office directory	5 00
William H. Dice	Making packing-boxes	44 00
Morton, Bliss & Co. (1878)	Commission on Halifax fishery award	13,750 00
New York Times	For legation to Mexico	3 00
Messager Franco-Americaine	Subscription, one year	20 00

B.—*Statement, &c.*—Continued.

To whom paid.	On what account.	Amount.
Western Union Telegraph Company	Telegrams, cable	$402 29
....do	....do	18 44
Radcliffe Baldwin, dispatch agent, New York.	Salary and disbursements	459 37
William H. Trescot	Legal services, ship-canal	100 00
William F. Lutz	Engraving wax seal, legation Tokio	60
New York Herald	For legations at Lisbon and St. Petersburg	11 00
Walter Scott	Services, mail clerk	71 80
Cincinnati Gazette Company	For legation at Copenhagen	12 00
William H. Trescot	Legal services, interoceanic canal	250 00
Western Union Telegraph Company	Telegrams in February	14 55
Do	Cable telegrams in February	108 52
William H. Trescot	Legal services, Interoceanic Canal	150 00
New York Tribune	For legation at Berlin	8 32
Commercial Advertiser Association	....do	9 00
New York Times	....do	8 00
....Do	For legation at Rome	4 41
New York Tribune	....do	4 27
Henry W. Hilliard, minister to Brazil	Removing legation to Rio (1879)	224 50
William H. Dice	Making packing-boxes, &c	23 00
J. F. Mann, Washington Post	For legation to Hayti	1 50
New York Daily Tribune	Subscription, three months	4 80
H. D. Bookman	Repairing mail-bags	31 25
John McCarthy	Hauling books	1 50
Harper & Bros	Harper's Weekly, legation Vienna	1 17
Hartley & Graham	Pistol presented President, Colombia	25 00
A. Loudon Snowden	For gold medal presented Bendix Koppel, arbitrator	64 00
Western Union Telegraph Company	Telegrams (cable) in March, 1880	380 26
William H. Dice	Making boxes and packing	46 75
Radcliffe Baldwin	Salary, disbursements, postage, &c	514 44
New York Evening Post	Subscription, legation St. Petersburg	7 62
Hartley & Graham	Sword and revolver presented President, Colombia	173 00
Western Union Telegraph Company	Telegrams (cable) in April	141 25
Do	Telegrams in April	41 00
Stewart L. Woodford	Expenses in Cuban expedition	26 49
F. L. O. Roehrig	Translating message, Sultan of Borneo	30 00
Eustace Collett	Expenses attending burial of Jos. Segar	7 75
William H. Dice	Making boxes	20 00
W. H. & O. H. Morrison	Books for legation at Bogota	80 50
Do	Books for legation at Peru	69 00
Charles Payson	Expenses attending obsequies Empress of Russia	26 75
W. H. McDaniels	Flags for foreign legations	362 50
William F. Lutz	Engraving seals	6 00
New York Times	Two months' subscription, legation at Copenhagen	2 00
Do	Bill of postage, May and June	1 20
The National Republican	Papers for Buenos Ayres and Lisbon	6 38
J. F. Mann, Washington Post	Legation at Hayti	1 50
Total contingent expenses foreign missions, expenditures at Department of State		27, 857 39

R. C. MORGAN,
Disbursing Clerk, &c.

B.—*Contingent expenses of all missions abroad during the fiscal year ending June* 30, 1880, *as reported by the Fifth Auditor of the Treasury,*

No.	Missions.	Contingent expenses.	Loss by exchange.	Total.	Remarks.
1	Argentine Republic	$400 00	$19 23	$419 23	
2	Austria	1, 038 88	4 75	1, 043 63	
3	Belgium	389 53	.....	389 53	
4	Bolivia	250 00	.....	250 00	
5	Brazil	120 97	.....	120 97	No contingent account from minister.
6	Central America	1, 953 25	15 54	1, 968 79	
7	Chili	400 00	70 00	470 00	
8	China	78 50	.....	78 50	Account of late Minister G. F. Seward, suspended.
9	Colombia	620 76	.....	620 76	
10	Denmark	450 00	141 80	591 80	
11	France	3, 338 24	17 24	3, 355 48	
12	German Empire	2, 736 91	.....	2, 736 91	

B.—*Statement, &c.*—Continued.

No.	Missions.	Contingent expenses.	Loss by exchange.	Total.	Remarks.
13	Great Britain	$3,359 62		$3,359 62	
14	Hayti	603 40		603 40	
15	Italy	565 92		565 92	
16	Japan	1,252 95		1,252 95	
17	Hawaiian Islands	208 41		208 41	
18	Liberia	296 01	$3 21	299 22	
19	Mexico	1,944 16		1,944 16	
20	Netherlands	434 79		434 79	
21	Paraguay and Uruguay	300 00	160 87	460 87	Accounts for second quarter not received.
22	Russia	2,253 62		2,253 62	
23	Spain	2,153 57	77 03	2,230 60	
24	Sweden	422 11	237 01	659 12	
25	Switzerland	570 71		570 71	
26	Turkey	2,580 36	391 83	2,972 19	
27	Venezuela	150 00	15 26	165 26	
28	United States dispatch agents.	4,772 10		4,772 10	
	Total	33,644 71	1,153 77	34,798 54	
	Grand total			62,655 93	

R. C. MORGAN,
Disbursing Clerk, &c.

B.—*Statement of amount of all former appropriations for contingent expenses of the Department of State, and contingent expenses of foreign intercourse, including all missions abroad, on hand June* 30, 1880.

In the Treasury:

Contingent fund, Department of State, 1879	$3,100 00
Contingent fund, foreign intercourse, 1879	6,247 86

In hands of disbursing clerk:

Contingent fund, Department of State, 1879	40 72
Contingent fund, foreign intercourse, 1879	598 34

In the Treasury, on account of appropriation, 1880:

Contingent expenses, Department of State	1,200 00
Contingent expenses, foreign intercourse, 1880	6,945 18

In hands of disbursing clerk, on account of appropriation, 1880:

Contingent fund, Department of State, 1880	945 17
Contingent fund, foreign intercourse, 1880	3,710 85
Total	22,788 12

R. C. MORGAN,
Disbursing Clerk, &c.

C.—*Analytical statement of all moneys disbursed by the disbursing clerk of the Department of State during the fiscal year ending June* 30, 1880.

Appropriation for—

Salaries of Secretary of State, assistant secretaries, clerks, messengers, watchmen, laborers, and extra clerks	$112,896 46
Proof reading, Department of State	1,588 00
Stationery, furniture, &c., Department of State	4,197 85
Books and maps, Department of State	1,994 61
Contingent expenses, Department of State	9,629 81
Rent of stable and wagon shed, Department of State	600 00
Lithographing, Department of State	1,308 70
Rescuing shipwrecked American seamen	1,177 50

Postage, executive departments, amount assigned to Department of State.	$1,274 43
Bringing home criminals	256 08
International Exposition at Paris, 1878 (no limit)	5,454 13
Editing, printing, binding, and distributing Revised and Annual Statutes, laws second session Forty-sixth Congress, 1880–'81	300 45
Tribunal of arbitration at Geneva, 1872 (no limit)	3,816 67
Contingent expenses of foreign missions, 1878	13,750 00
Contingent expenses of foreign missions, 1879	1,283 68
Contingent expenses of foreign missions, 1880	12,763 71
Contingent expenses of United States consulates	50,089 56
International Exhibition at Sydney and Melbourne, Australia	5,769 96
International remonetization of silver	2,080 00
Berlin Fishery Exhibition	11,313 61
Monument to mark the birthplace of Washington	50 00
Revising and editing Consular Regulations	3,000 00
Total	244,595 21

R. C. MORGAN,
Disbursing Clerk, &c.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 36.

BALTIMORE HARBOR.

LETTER

FROM

THE SECRETARY OF WAR,

RELATING TO

The harbor at Baltimore, Md.

JANUARY 13, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 12, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a letter from the Chief of Engineers dated the 11th instant, referring to his last annual report, page 101, in relation to the harbor of Baltimore, Md., and submitting copy of special report on the subject from Lieut. Col. W. P. Craighill, Corps of Engineers, which is also transmitted herewith.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 11, 1881.

SIR: In my annual report for the last fiscal year at page 101 it is stated, in reference to the harbor of Baltimore, Md.—

> There are indications of a demand for a greater depth of water. One of these is a call from the Senate of the United States at its last session for information as to the cost of obtaining a depth of 27 feet at mean low water. In response to this call an approximate estimate was made. A careful resurvey is now in progress over the whole channel, from which an accurate estimate can be made and submitted to Congress.
>
> * * * * * * *
>
> A special report will be made when the survey, map, and estimates, are completed.

In fulfillment thereof I have now the honor to submit the inclosed copy of the report of Lieut. Col. W. P. Craighill, Corps of Engineers, upon the survey referred to, to which attention is respectfully invited,

and which, it is recommended, be sent to the Speaker of the House of Representatives for the information of the Committee on Commerce.

It will be seen that the estimated cost of deepening the channel to 27 feet at mean low-water is $1,250,000, or less by a quarter million dollars than the approximate estimate heretofore submitted.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

IMPROVEMENT OF CHANNEL OF APPROACH TO THE HARBOR OF BALTIMORE, MARYLAND, IN PATAPSCO RIVER AND CHESAPEAKE BAY.

UNITED STATES ENGINEER OFFICE,
Baltimore, Md., January 5, 1881.

GENERAL: Just before the adjournment of Congress last June, I reported by telegraph, on a call for information from the Senate, that it would probably cost $1,500,000 to deepen to 27 feet, at mean low-water, the channel of approach to the harbor of Baltimore, in Chesapeake Bay and the Patapsco River. This estimate was an approximate one, and founded on the best information attainable at the moment of the sudden call.

An accurate and very careful survey of the whole line of the channel has been made, and I am now able to report reliably on the subject.

A tracing is inclosed, showing the line of the channel as at present in use, with a proposed cut-off near the lower end of the Brewerton Channel, which will be referred to more particularly in another part of this communication.

Further information as to local features may be obtained from the Coast Survey Chart mentioned on this tracing, which may be placed over it for comparison.

The "Brewerton" Channel, as originally projected by the Engineer Officer of that name, extended several miles farther (in the same straight line) towards the eastern shore of the bay. The current of the Susquehanna River swept almost directly across that portion of the Brewerton Channel which is to the eastward of the line drawn tangent to the western bank of that river, marked in the tracing by the letters *a*, *b*. This current caused a heavy and unceasing deposition in the portion of the Brewerton Channel to the eastward of the point *a*.

This difficulty had much to do with the search for a better position for the channel, and led in part to the adoption of what is now called the "Craighill" Channel, and the abandonment of the old ship channel passing near Swan Point.

These changes in the position of the channels have proved highly advantageous to the navigation and commerce connected with the city of Baltimore.

It is, however, found necessary to keep the dredges at work very much in the portion of the Brewerton Channel still used, to the eastward of the point *a*.

When the changes referred to were made, the depth of channel sought to be attained was 22 feet at mean low-water. Under the press-

ure for the accommodation of vessels of deeper draught, the depth was increased to 24 feet at mean low-water, which was gained in 1874, and has since been maintained. It should be mentioned to the credit of the city of Baltimore, that she spent her money freely for this improvement in co-operation with the United States Government.

The needs of her commerce now cause Baltimore to wish for a still greater depth of channel, viz, 27 feet at mean low-water. The occasion is deemed a favorable one for making still further changes in the position of the channel, the main features of which changes would be the abandonment of another portion of the Brewerton Channel, as well as the upper part of the Craighill Channel, and the adoption of a line marked on the tracing as the "proposed cut-off." The advantages of these changes would be the shortening of the total length of the channel by nearly a mile, and the getting rid of a part of the Brewerton Channel—difficult and expensive to keep open.

It should be mentioned that the proposed cut-off is in the direction of a natural channel, of no great depth, called the "Swash." Some of the material in it is harder than any found in the Brewerton Channel, and the probabilities are that this channel would have been much deeper under natural agencies if the material had been sufficiently soft to enable the existing currents to move it away.

Consideration of the same probabilities, as well as experience here and elsewhere, lead to the opinion that if the channel were once made in this proposed position to the depth of 27 feet, it could be more easily and cheaply maintained than in the portion now used.

The cost of the deepening of the channel to 27 feet at mean low-water from estimates based on the survey just completed is found to be $1,250,000, or less by $250,000 than the approximate estimate of last June.

If this important improvement be undertaken the necessary funds should be liberally provided, as great economy would result from its completion in the shortest possible time. All the advantages of the improvement can only be had when it is completed. The longer the time given to the work the longer will Baltimore be kept waiting for what her commerce needs at once. The longer time is given to the work the longer will the existing commerce be vexed by the presence of many dredges working in the channel, for while these machines are deepening the channel they must be in it, and more or less in the way of passing vessels.

At this time there is much discussion as to the choice of a route for the ship-canal proposed to connect the Chesapeake and Delaware Bays. From present appearances it would seem that the choice is to be between the most northern and the most southern routes, viz, the Sassafras route and the Choptank route. As this canal is in one of its aspects but the continuation of Baltimore's channel to the ocean, the changes proposed above have an important bearing on the choice of a route for the canal.

If the Sassafras route be adopted the opening of the proposed cut-off would increase the distance from Baltimore to the mouth of the Sassafras River, or it would be expedient not to make the cut-off, but to adhere to the Brewerton Channel as now used. In addition to the maintenance of the portion of the Brewerton Channel, which it is now proposed to abandon for reasons stated above, and which seem to be good, it would be also necessary to reopen the portion of the Brewerton Channel abandoned years ago, and maintain it for all time to come.

The probabilities are against the practicability of maintaining this old portion of the channel with the increased depth, except at very great expense.

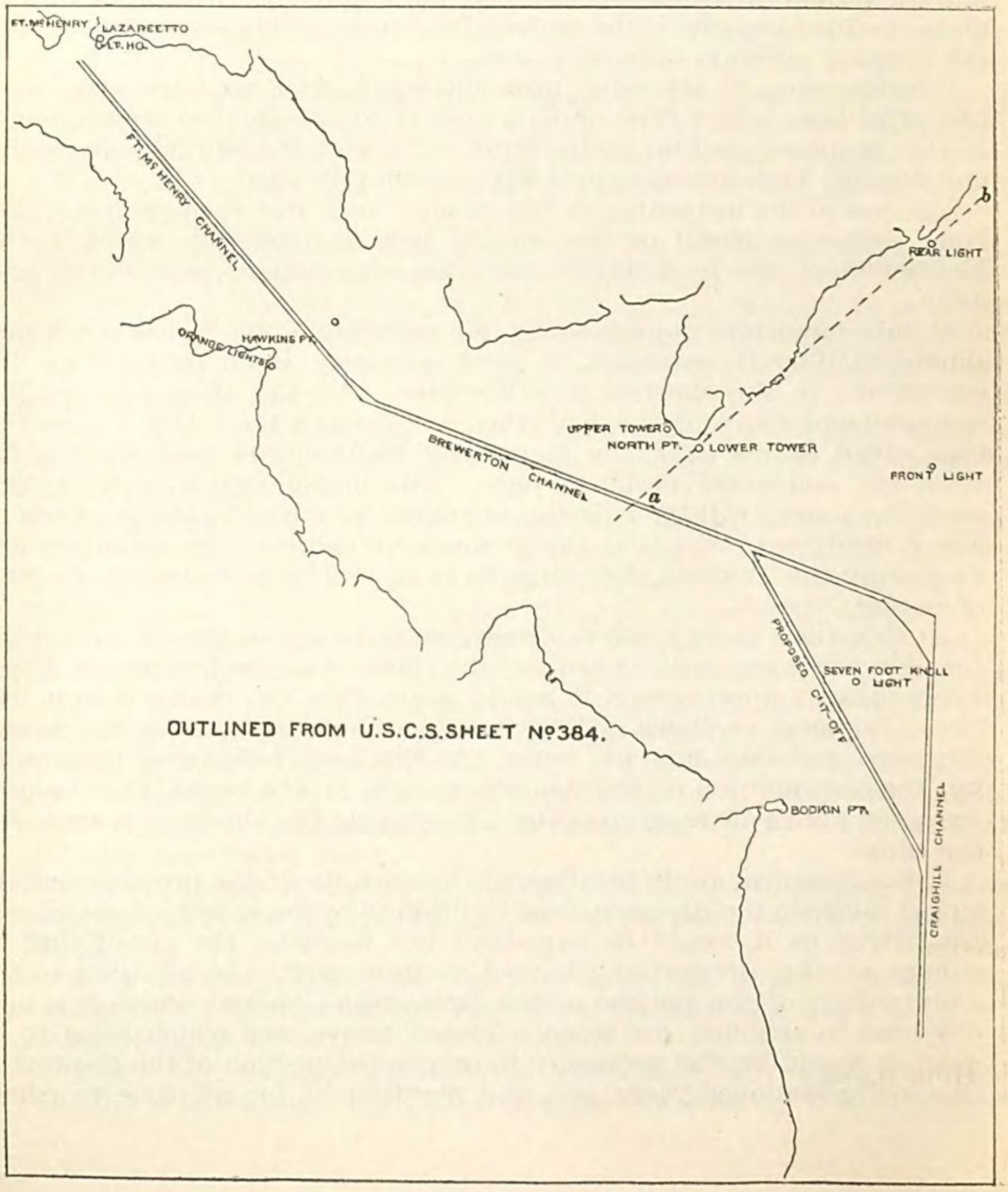
On the other hand, if the Choptank route be adopted, all the advantages of the proposed cut-off are in favor of that route. The natural route to the ocean from the mouth of the Patapsco is through the proposed cut-off and towards the western mouth of the Choptank route. In such matters, unless there be strong reasons to the contrary, it is best to follow the indications of nature.

Thanks are due to Mr. J. L. Seager, assistant engineer, for his earnest and faithful labor, under much exposure, and in the face of serious obstacles, in the conduct of the survey upon which the estimate now submitted is based.

Very respectfully, your obedient servant,

WM. P. CRAIGHILL,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.



46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 37.

MISSISSIPPI RIVER AT ANDALUSIA, ILLINOIS, AND LOUISIANA, MISSOURI.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of surveys on the Mississippi River at Andalusia, Ill., and Louisiana, Mo.

JANUARY 13, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 12, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, dated the 7th instant, covering copies of reports from Capt. Alexander Mackenzie, Corps of Engineers, upon surveys of the Mississippi River at Andalusia, Ill., and at Louisiana, Mo., made in compliance with the provisions of the river and harbor act of June 14, 1880.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 7, 1881.

SIR: To comply with provisions of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Capt. Alexander Mackenzie, Corps of Engineers, of the results of surveys made under his direction of the Mississippi River at Andalusia, Ill., and Louisiana, Mo., with a view to the improvement of navigation at those places.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY OF THE MISSISSIPPI RIVER AT ANDALUSIA, ILLINOIS.

UNITED STATES ENGINEER OFFICE,
Rock Island, Ill., December 17, 1880.

GENERAL: I have the honor to present the following report and accompanying map of a survey of the "Mississippi River at Andalusia, Ill.," made in accordance with your instructions dated June 17, 1880.

The report includes a plan and estimate for the improvement of the harbor of Andalusia so as to permit the entrance and landing of the largest boats used on the Upper Mississippi River at the lowest stages of water. The town of Andalusia is situated on the south channel of the river, about 10 miles below Rock Island, Ill.

It has the most available landing on the Illinois side between Rock Island and New Boston, a distance of about 55 miles, and is the natural outlet of a large part of Rock Island and Mercer Counties for the shipment of agricultural products.

The south channel, on which Andalusia is situated, has never been the *main* channel of the river, being much obstructed by rocks and sandbars, so as to make it unnavigable by the larger boats, excepting at high stages of water. The ordinary approach to the landing is made through the narrow passage called the "Ferry Crossing," between islands 320 and 321, and the northern end of this passage, as well as that portion of the south channel in front of the town, is so blocked up with sand as to shut out all but the smaller boats at low stages of water. To remedy this difficulty and make the approach to the landing easy for all boats, at all stages, I would respectfully submit the following

PROJECT.

1. The construction of a dam (No. 1) of rock and brush from the Illinois shore, below the town, to island 321.

This dam, with its crest at an elevation of 3 feet above low water, would turn the current through the "Ferry Crossing" and insure an increased depth at the head of this passage, as well as across the bar in front of and opposite the landing. This dam will be 1,250 feet in length, and the shore of island 321, at the north end of the dam, should be protected for a distance of 200 feet.

2. To prevent excessive abrasion at the head of island 321, the shore should be protected for a distance of about 900 feet. The foot of island 320 may be allowed to cut away so as to give sufficient width in the passage.

3. The construction of a dam (No. 2), with necessary shore protections, from head of island 320 to foot of island 319.

This should be done to prevent the widening and deepening of this passage, which, if permitted, might destroy the beneficial effect expected from dam No. 1.

The length of this dam is 450 feet, and its crest will be at an elevation of 3 feet above low-water.

4. The construction of a dam (No. 3) to close the narrow passage between islands 319 and 318. This dam will be 200 feet in length, with its crest at an elevation of 3 feet above low water.

ESTIMATE.

Dam No. 1:		
3,198 cubic yards rock, at $1.50	$4,797	
2,927 cubic yards brush, at $1	2,927	
		$7,724
Shore protection head of island 321:		
1,350 cubic yards rock, at $1.50	2,025	
900 cubic feet brush, at $1	900	
		2,925
Dam No. 2:		
1,644 cubic yards rock, at $1.50	2,466	
1,248 cubic yards brush, at $1	1,248	
		3,714
Dam No. 3:		
1,050 cubic yards rock, at $1.50	1,575	
850 cubic yards brush, at $1	850	
		2,425
Engineering and contingencies, say		1,212
Total		18,000

COMMERCIAL STATISTICS.

The amount of grain, potatoes, and apples shipped from Andalusia was in 1880 100,000 bushels. Shipments would be much greater if the approach to the landing were improved so as to admit large steamboats during low water stages.

Very respectfully, your obedient servant,

A. MACKENZIE,
Captain of Engineers.

To the CHIEF OF ENGINEERS, U. S. A.

SURVEY OF THE MISSISSIPPI RIVER AT LOUISIANA, MISSOURI.

UNITED STATES ENGINEER OFFICE,
Rock Island, Ill., December 22, 1880.

GENERAL: I have the honor to present the following report and accompanying map of a survey of the "Mississippi River at Louisiana, Mo.," made in accordance with your instructions dated June 17, 1880:

The report includes a plan and estimate for the improvement of the river from the upper end of the city (including the harbor) to a point about 3¼ miles below the bridge, a total length of about 5 miles.

ABOVE THE BRIDGE.

Through navigation above the bridge is good, and the approach to the draw, formerly somewhat difficult, is now much improved. There appears, however, a tendency to the formation of sand-bars in front of the city (see map), and the landings are gradually becoming obstructed by sand deposits. To prevent the further formation of such deposits, and remove those already made, the construction of a spur-dam is recommended in accordance with the general plan for improving the river, extending from the Illinois shore out to the deep water of the channel, as shown on the map.

This dam, by more closely confining the channel to the Missouri shore, will have a beneficial result.

Another question occurs, the ferry crossing has by degrees become more and more obstructed until at present the route is very circuitous.

The ferry being an important factor in the prosperity of Louisiana, much interest in the matter has been shown, and a petition, of which the following is a copy, was presented to the honorable Secretary of War in December, 1879:

To the Hon. GEORGE W. MCCRARY,
Secretary of War of the United States of America:

We, the undersigned, citizens of Pike County, Missouri, river men of Mississippi River, would respectfully represent that the dike built by the Chicago and Alton Railroad Company in the Mississippi River near the Illinois shore, opposite the city of Louisiana, has not been kept in that state of repair necessary to make it efficient for any of the purposes intended in the original construction thereof. The upper end, which is intended to turn the current, has become so low as to form no impediment to the course of the water, and the lower part has caused a very large bar to form both above and below the dike, so that the ferry-boat plying between the Illinois and Missouri shores can only cross by going 2 miles or more out of its course, and that at great risk to the boat, which has to pass twice under the railroad bridge, and pursue a narrow and tortuous course in close proximity to large piles of stone thrown in the river by said railroad company to protect their bridge.

We would further show that unless some action is taken by the government the channel of the river itself may be very seriously affected by the condition of the dike and the obstructions placed in the river by said railroad company.

We would respectfully petition that you take such appropriate action in the premises as will remove all causes of complaint and occasions of damage, and all hindrances to inter-State commerce by means of the ferry, now in operation at said city of Louisiana.

Signed by J. N. Montgomery, pilot; Frank Burnett, United States steamboat inspector, and many others.

The above petition was referred to me by letter of the Chief of Engineers, of December 27, 1879, and I made the following report in regard to it:

UNITED STATES ENGINEER OFFICE,
Rock Island, Ill., January 2, 1880.

GENERAL: As instructed in an indorsement, dated Office Chief of Engineers, December 27, 1879, on a letter addressed to the honorable Secretary of War by the Hon. F. M. Cockrell, dated December 18, 1879, and referring to a dike in the Mississippi River opposite Louisiana, Mo., I have the honor to report as follows:

This dike was built by the Louisiana and Missouri River Bridge Company in accordance with the recommendations of the Board of Engineers to whom were referred the plans and proposed location of the Louisiana bridge.

The dike was built to straighten the channel and remove a sand-bar above the draw of the bridge. A comparison of the maps made in 1876 and 1878 shows that the dike, by confining the channel to the Missouri shore, has caused a part of the bar to be washed away, and that the channel above the draw of the bridge has been improved, though additional works are still required to render the passage through the draw of the bridge easy. The dike has held a large sand-bar above and below it, as was expected. For general purposes of navigation this is very desirable, but, as stated in the petition and shown on accompanying tracing, the ferry route has been lengthened out and made troublesome by the crest of the bar, which is gradually moving down stream.

Capt. B. D. Greene, corps of engineers, inspected this dike last month. He found it had settled in some places and required numerous repairs.

Though the deep pockets near Illinois shore and close up to the dike may sometime cause trouble, he does not consider that there is any immediate danger of any portion of the dike being carried away. The improvement of the river necessitates the construction of dams which will confine the low-water channel and hold the sand-bars. Where such works cause a shoaling, or form bars which interfere with former landings, the only remedy to be suggested is to move the landing out to deep water and construct a causeway by which it may be reached during low-water. The trouble of the ferry company at Louisiana might be overcome by converting the railroad dike into a causeway, but considering the condition of the dike and the manner in which it was built, it would be undoubtedly better to construct a causeway on the line shown in red on the accompanying tracing, which is the approximate position of a spur-dam included in the plans for the general improvement of the river in the vicinity of Louisiana. To build an ordinary spur-dam of the required length and height would cost about $8,000.

To build this dam in the form of a causeway 15 feet wide on top and 5 feet above low-water would exceed the cost of the spur-dam about $8,000.

The papers referring to this matter are returned herewith, as requested.

Very respectfully, your obedient servant,

A. MACKENZIE,
Captain of Engineers.

To the CHIEF OF ENGINEERS, U. S. A.

BELOW THE BRIDGE.

The channel within the limits of the map is moderately deep, although somewhat crooked, especially just below the bridge. About 2,000 feet from the bridge, and nearly in the center of the channel, is a sunken rock barge. This should be removed. There appears to be a tendency of the channel to turn over to the Illinois shore above sand-bar "A," and as this would render the channel more crooked and liable to obstruction by sand-bars this tendency should be prevented. Farther down, at Brokau Island, steamboats now run the western channel known as Krider's Bend, and it is very desirable that the channel be maintained on this side, and not allowed to change as heretofore from one side of the island to the other, navigation being always obstructed while such changes are going on.

For carrying out the improvements above suggested, I would respectfully present the following

PROJECT.

1. The construction of a spur-dam (No. 1) from the Illinois shore, starting from a point about 600 feet above the old dike and extending out to the deep water of the channel, a distance of 1,750 feet, its crest to be at an elevation of 4 feet above extreme low-water. This dam, by materially contracting the water-way, will hold the channel on the Missouri shore, remove the bars now forming in front of the city and along the landings, and prevent further deposits of sand or mud.

2. The removal of the sunken rock barge in the channel below the bridge.

3. The closing of Buffalo Island Chute near its head by a dam (No. 2), with its crest at an elevation of 4 feet above low-water.

4. The construction of a spur dam (No. 3) from the Illinois shore to sand-bar A, about 1,800 feet in length, to prevent a diversion of the channel to the eastern shore.

5. The protection of the eastern shore of Buffalo Island for a distance of about 1,800 feet.

6. The construction of a closing dam (No. 4) across Brokau Chute, in order to maintain the channel in Krider's Bend, where it now is, and where it is very desirable that it should remain.

This dam will be 1,150 feet long, and have its crest at an elevation of 4 feet above low-water.

ESTIMATE.

Dam No 1, above bridge:		
4,064 cubic yards rock, at $1.50	$6,096	
3,467 cubic yards brush, at $1	3,467	
		$9,563
Removal of rock pile:		
Five days' hire of dredge, &c., at $100		500
Dam No. 2, Buffalo Chute:		
948 cubic yards rock, at $1.50	1,422	
625 cubic yards brush, at $1	625	
		2,047

Dam No. 3, Illinois shore to sand-bar A:		
6,630 cubic yards rock, at $1.50	$9,945	
6,285 cubic yards brush, at $1	6,285	
		$16,230
Shore protection, Buffalo Island:		
3,888 cubic yards rock, at $1.50	5,832	
2,592 cubic yards brush, at $1	2,592	
		8,424
Dam No. 4, Brokau Chute:		
6,546 cubic yards rock, at $1.50	9,819	
6,225 cubic yards brush, at $1	6,225	
		16,044
Engineering and contingencies, say		2,192
Total estimate		55,000

To construct a causeway suitable for teams 15 feet wide on top, and at a height of 6 feet above low-water, which would serve the same useful purpose as Dam No. 1, and also furnish a good landing at its outer end for the ferry-boat, thus obviating the troubles to which the ferry is now exposed, would cost $17,000, or about $7,500 in excess of the cost of Dam No. 1. Should it be thought proper to build this causeway, the amount of $7,500 should be added to the foregoing estimate.

To repair the old dike would require about 3,000 cubic yards of rock, and would cost about $4,500.

COMMERCIAL STATISTICS.

Louisiana, Mo., has a population of about 5,000, and is the principal city of Pike County. It is the second city of the State in the manufacture of tobacco, being surpassed in that respect by Saint Louis alone.

The following statement shows the volume of business done at Louisiana in 1880:

	Value.
Tobacco manufactured	$500,000
Lumber	300,000
United States stamps used	150,000
Banks	5,000,000
Dry-goods and groceries	1,000,000
Flouring mills	150,000
Other business	300,000
Total	7,400,000

Very respectfully, your obedient servant,

A. MACKENZIE,
Captain of Engineers.

To the CHIEF OF ENGINEERS, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 38.

SURVEYS OF CERTAIN STREAMS IN LOUISIANA, MISSOURI, MISSISSIPPI, AND ARKANSAS.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of surveys of Bayou Bartholomew, Tensas River, Bayou Maçon, and Bœuf River, Louisiana; Current River, Missouri; Harbor at Grand Gulf, Mississippi, and Cache River, Arkansas.

JANUARY 13, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 12, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, dated the 11th instant, and accompanying copies of reports from Maj. W. H. H. Benyaurd, Corps of Engineers, upon examinations and surveys made in compliance with the provisions of the river and harbor act of June 14, 1880, at Bayou Bartholomew, Louisiana; Tensas River, Louisiana; Bayou Maçon, Louisiana; Current River, from Van Buren, Missouri, to its mouth in Arkansas; harbor at Grand Gulf, Mississippi; Cache River, Arkansas; and Bœuf River, North Louisiana.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 11, 1881.

SIR: In compliance with requirements of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Maj. W. H. H. Benyaurd, Corps of Engineers, of the results of examinations and surveys made under his direction at the following localities, with a view to their improvement, viz:

Bayou Bartholomew, Tensas River, and Bayou Maçon, Louisiana.

Current River, from Van Buren, Mo., to its mouth, in Arkansas.
Harbor at Grand Gulf, Mississippi.
Cache River, Arkansas, a tributary of White River.
Bœuf River, North Louisiana.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

EXAMINATION OF BAYOU BARTHOLOMEW, ARKANSAS AND LOUISIANA.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 20, 1880.

GENERAL: I have the honor to present the following report upon Bayou Bartholomew, Arkansas and Louisiana, with estimate of cost of improving same, in accordance with act of Congress approved June 14, 1880:

PREVIOUS SURVEYS, EXAMINATIONS, ETC.

The State of Louisiana has, at various times, caused surveys of that portion of the bayou lying within its boundaries to be made, and various sums have been appropriated and expended in the work of removing obstructions from the stream. The State of Arkansas has likewise at times expended money in the same direction for the portion of the bayou lying between the north boundary of Ashley County and the State line.

In 1872 an examination of the bayou from the State line between Arkansas and Louisiana to its mouth was made in accordance with act of Congress, the report upon which will be found in the report of the Chief of Engineers for 1872, part 2, page 383. No appropriation, however, was made for the improvement according to the estimate then presented.

In 1876, having the snag-boat Wagner at work in the Ouachita, I directed that certain obstructions in the lower part of the bayou be removed, in order to assist the shipment of the crops of that section of the adjoining country, whose only outlet was through the bayou. The *Wagner* worked to Point Pleasant, a distance of 30 miles, and was then withdrawn.

In accordance with the provisions of the river and harbor act of June 18, 1878, I caused another examination of the bayou to be made. The report thereon will be found in the report of the Chief of Engineers for 1879, page 997.

From the reports above noted, and from a recent examination made under my direction by Mr. John J. Barry, I am enabled to present a report containing all the information necessary upon which to base estimates for the improvement of the bayou.

The bayou takes its rise in the State of Arkansas, within a few miles of Pine Bluff, on the Arkansas River, and, following an exceedingly tortuous course, flows at first nearly parallel to the Arkansas River, at distances from it varying from 15 to 30 miles; then parallel to the Mississippi River at about the same average distance, and after entering Louisiana it diverges to the southwest and empties into the Ouachita River opposite Ouachita City. In Arkansas it flows through Jefferson,

Lincoln, Drew, and Ashley Counties, and in Louisiana through Morehouse Parish.

The bayou is crossed at Baxter Station (Drew County) by the Mississippi and Texas Railroad, which has its starting point on the Mississippi River at Arkansas City. The distance from Bird Springs, the head waters of the Bartholomew, to Baxter's Station is estimated at 120 miles. At this point the channel is about 100 feet wide, with a depth at low-water of about 3 feet. The bridge crossing is a trestle-work 350 feet long, with bents 12½ feet between centers; the height of the rail being about 22 feet above the bed of the stream. As ordinary high-water comes within 4 feet of the rail, it will be seen that the bridge is a bar to all navigation about the crossing except to stave-boats, of which there are a great many upon this section of the stream. I deem it therefore only necessary to consider the navigable portion of the bayou, from Baxter Station to the mouth, and to present estimates for the improvement of the same.

BAXTER STATION TO THE LOUISIANA STATE LINE.

In this stretch, a distance of 110 miles, the bayou is in a very unsafe condition, either in high or low water, on account of the various obstructions which fill the bed and line the banks of the stream.

In the first 25 miles (from Baxter to Rust's) the bayou varies from 50 to 150 feet in width, with a depth varying from 4 to 10 feet at low-water, except upon the shoal places, where at times only 12 inches can be found.

From Rust's to the State line the bayou varies from 90 to 180 feet in width, and, except at the shoals and fords, is from 5 to 10 feet at low water. The current for the greater part of the distance is quite sluggish, seldom attaining a greater rate than 1½ miles per hour.

The Wiggins place, about half way between Baxter and Rust's, is virtually the head of navigation. Since the construction of the railroad above, boats have seldom gone as high as Baxter. Some of the steamers make round trips to and from New Orleans; others connect at Trenton and Monroe with the regular New Orleans and Ouachita River packets.

OBSTRUCTIONS TO NAVIGATION.

The serious obstructions to navigation are the snags, logs, and overhanging trees. A hurricane crossed the bayou several years ago at a point about 1 mile above Portland, and here the trees are lying thick across the stream, though there is quite a good depth of water in the vicinity. Some of these obstructions have been cut in order to allow boats to pass at ordinary good stages of water, but at low water the place is said to be impassable. In addition there are the following named fords:

Name.	Depth in feet at low-water.	Name.	Depth in feet at low-water.
Gaster's	1	Bloomer's	3
Rust's	2	Sanford's	3
Townsend's	2	Sandy Point	2½
Mrs. Womack's	1½	Smith	3
Perkin's	3½	Dade	3
Shearer's	2½	Eastman	3
Pugh	3		

LOUISIANA LINE TO OUACHITA RIVER.

This stretch is 103 miles in length, according to the measured distance taken from a map of the bayou, surveyed by the board of State engineers of Louisiana. The bayou is exceedingly tortuous, there being many bends where the distance across the neck is about ½ mile, while around by the channel the distance is from 5 to 8 miles. The velocity of the current is greater than in the upper bayou, being from 1½ to 2½ miles per hour. The width of the bayou varies from 100 to 200 feet, and in depth, except at the fords and shoals, from 5 to 9 feet, though in many cases the pools below the shoals show a depth of upwards of 20 feet, which is characteristic also of the Ouachita.

In addition to the 18 fords in this stretch, where the depth varies from 1½ to 3 feet, the obstructions to navigation consist of wrecks, snags, logs, and leaning timber.

IMPROVEMENTS AND ESTIMATES.

For the improvement at the present time, it is proposed to cut down the leaning timber and remove the wrecks, snags, &c. The working season would be from July to December, at which time the bayou would be sufficiently low to allow the work to be done economically. The outfit would consist of a flatboat, with the necessary machinery and outfit of tools, &c., for removing the obstructions from the bed of the stream, while an extra party could be employed on the banks, cutting the leaning timber. In the upper part of the bayou, where the current is somewhat sluggish, this timber would have to be disposed of on the bank and not be allowed to fall into the river.

ESTIMATES.

Outfit:	
Flatboat	$1 000 00
Engine	900 00
Tools, rigging, &c	500 00
Repairs and incidentals	300 00
Total	2,700 00
Labor, &c.:	
1 assistant engineer, per month	150 00
1 foreman, per month	100 00
1 engineer, per month	90 00
1 cook, per month	60 00
18 laborers, at $60 per month	1,080 00
Subsistence	330 00
Total for one month	1,810 00
Total for 12 months, two seasons	21,720 00
Cost of outfit	2,700 00
	24,420 00
Contingencies, 10 per cent	2,442 00
Total estimate for improvement	26,862 00

It is possible that good labor may be procured at a price less than named in the estimates, but the work must be conducted at a season when labor is needed for picking cotton and at which good wages can be made. During the past season the roustabouts on the lower-river steamers received $90 per month, and in some cases demanded and received as high as $110.

COMMERCIAL STATISTICS.

Average products per season:

Oak staves carried on flatboats	180,000
Oak staves carried on steamboats	12,000
Total	192,000

Cotton.

Principal shipping points and number of bales:

Baxter station to State line:

Baxter station	*2,000	
Durmont	*2,000	
Oakland	*1,500	
Poplar Bluff	3,000	
Erie City	500	
Intermediate landings	5,000	
		14,000

From State line to Ouachita City:

Line	10,000	
Linn Grove	1,500	
Bastrop and Point Pleasant	10,000	
Cotton from the hills	6,000	
Intermediate landings	4,000	
		31,500
Total		45,500

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

EXAMINATION OF TENSAS RIVER, LOUISIANA.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 1, 1880.

GENERAL: I have the honor to present the following report upon the examination of Tensas River, Louisiana, with estimated cost of removing obstructions from same, in accordance with act of Congress approved June 14, 1880.

The bayou was examined from its headwaters near Lake Providence to its junction with the Ouachita River at Trinity, Louisiana, a distance estimated at 256 miles. The party in the field was under the charge of Mr. H. C. Wilson, assistant engineer, whose report will be found annexed.

The improvement considered necessary to be made at the present time contemplates the removal of the obstructions to navigation consisting of snags, logs, and leaning timber. The extreme upper section of the river, from the head-waters down to the crossing of the Vicksburg, Shreveport and Texas Railroad is so filled up with these obstructions, and the cost of making a navigable channel is so great, when compared to the advantages to be gained commercially, that I have not deemed it necessary to consider that section.

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*Carried by rail to Mississippi River.

Mr. Wilson estimates the cost of improving the river from the mouth to the Westwood place, a distance of 92 miles, at $13,722.50. Boats, before the war, ran to Dallas at the railroad crossing, a further distance of 88 miles. I think the improvement might with advantage be continued to that point giving increased facilities for the shipment of the crops. The total cost of the whole work I estimate at $23,000.

The amount of cotton shipped from the bayou annually is estimated at 10,000 bales, valued at $500,000; in addition to about 70,000 sacks cotton seed.

As mentioned in the report on Bayou Maçon, the Tensas lands are liable to inundation from the breaks in the front levees on the Mississippi River; were these breaks closed up and the bayou improved, there would result a greatly increased acreage, and increase in the amount and value of the crops.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. H. C. WILSON, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., October 29, 1880.

MAJOR: I have the honor to submit to you my report upon the examination of Bayou Tensas, Louisiana, which I made under your direction.

Bayou Tensas heads in Lake Providence, and with a small bayou called Baxter's Bayou is the only outlet to this lake. It is situated in Carroll Parish in the northeastern portion of Louisiana. The lake derives its supply of water from a small stream called Jack's Falls, and the drainage of the surrounding country. The general direction of Tensas is southerly and gradually diverging from the Mississippi River. During its course it flows through Carroll, Madison, and Tensas parishes, and borders Franklin and Catahoula Parishes on the west, and Concordia Parish on the east. It finally empties into the Ouachita River, opposite Trinity. The junction of Tensas with the Ouachita and Little Rivers at this point forms the Black River. I estimate the total length of the bayou to be about 256 miles.

In accordance with your instructions of October 3, 1880, I left Grand Gulf and proceeded to Vicksburg, where I obtained my necessary camping outfit and also a light skiff and two skiff-men. I then proceeded to Lake Providence, intending to enter the bayou there. I did not find it in a very favorable condition for the examination desired, as, owing to the frequent local rains, it was very near the high-water mark of the bayou itself, without any water from the Mississippi River entering. It was falling rapidly, however, and before I reached the mouth was within 2 feet of low water mark, *i. e.*, the lowest water known. From all the information I could gather the oscillation of the bayou is about 5 feet, so that there is no danger of its overflowing its banks.

I shall divide the bayou into two parts and describe them separately. The first stretch will reach from its head to the present high water limit to navigation, and the second stretch from the head of navigation to the mouth.

FIRST STRETCH.

Immediately upon leaving Lake Providence the bayou is about 200 feet wide, and remains this width for about half a mile. This width is, however, owing to the artificial canal cut by General Grant. At the end of this half mile it makes a sharp turn to the right and narrows up to 40 feet or less and 10 feet deep. It continues this way for about 3 miles, making several sharp turns to the south and west; it also becomes narrower after each turn until at the end of 3 miles it is but about 12 or 15 feet wide. Here, however, it reaches a very low country and divides into a number of small streams and forms a swamp land, and in some places it would be very difficult to trace the bayou. It continues this way for about 6 miles, when it commences to collect itself, and about a mile further runs into Swan Lake. This is a lake 2 miles long and

varies in width from 200 to 400 feet. From the head of the bayou to this lake there are any number of obstructions in the form of snags and timber reaching from one bank to the other, and I found it would be impossible to traverse it even in a skiff. I, therefore, had my skiff and party hauled by wagon to the foot of Swan Lake, where I entered the bayou.

Swan Lake has another outlet about half way down on the west side—Joe's Bayou, and it is a tributary of the Maçon. Sometimes, however, when Tensas is very low it runs into Swan Lake instead of out of it.

The soil along the bayou is particularly fertile, being of the very dark variety, and I was informed that in a good season it yielded readily a bale and a half of cotton to the acre. Most of it is, at present, lying idle, and tracts which were formerly large plantations are now covered with underbrush. All this is owing to the overflows from the Mississippi, which enters through the Ashton break in the levees, a distance of about 30 miles above. A few of the plantations under cultivation have small levees 2 or 3 feet high, which keep out all except extreme high water. All this portion of the country readily finds a shipping point at Lake Providence, and cotton is even hauled there from Floyd on the Maçon.

Tensas I found about 120 feet wide at the foot of Swan Lake and about 6 feet deep. There is a ferry, known as Conn's Ferry, here on the road leading from Lake Providence to Goodrich's Landing. The banks are sloping on both sides and, I should judge, about 10 feet high; they are mostly composed of a clayey soil with an alluvial deposit on top and an occasional layer of sand. High water marks from Mississippi River overflows I found on almost all the trees, and they indicated that the banks were overflowed to a depth of about 6 feet. About a mile below the lake the bayou had narrowed up to 75 feet, and was about 10 feet deep and pretty straight, and I counted 10 bad snags. The bayou now begins to get very crooked, the width varying from as low as 20 feet to 100 feet. Numerous obstructions in the way of fallen timber, rafts, snags, and drift piles are encountered, and very frequently shoals. These latter are generally found in the straight reaches at the foot of bends. I sounded on all of them and found from 3 to 5 feet of water; at low-water they would, therefore, be very shallow. There is not much leaning timber, but some would require removal. The current is very sluggish, the bends making the slope of the water surface very small.

The banks are high and covered with heavy timber, which consists of almost every variety growing in that latitude. Oak seems to be most abundant, but the timber is of poor quality. About 6 miles below Swan Lake the bottom consists of clay, and having mixed with it white shells. Thirty miles below Swan Lake a bridge crosses the stream on the road leading from Monticello, on the Maçon, to Goodrich's Landing, on the Mississippi River. The bayou presents about the same aspect as before described, except that I now began to encounter cypress trees growing in the middle of the stream, and which, with their numerous knees, present formidable obstructions. In many cases I had to cut my way through them. Below the Monticello road the bends are much sharper, and almost all the points in these bends would have to be cleared out.

About 20 miles below the Monticello road a small bayou connects Tensas with Bear Lake. A second bayou, called Roundaway, empties into Tensas about 10 miles below this. From there on Tensas is very straight, and varies from 300 to 500 feet in width, and is from 8 to 12 feet deep until it is crossed by the railroad known as the Texas & North Louisiana Railroad. This railroad crossing I judge to be, by way of the bayou, about 80 miles from Lake Providence. The clearings of old plantations are frequently to be seen, but none are under cultivation. Some of them are on quite high banks, and seem to be above all except extreme high water overflows from the Mississippi. I did not see any good timber suitable for rafting along the banks of the bayou, but further back, I understand, are good cypress brakes, and I saw quite a number of rafts waiting to be rafted down at the next high water.

The railroad spans Tensas by an iron tubular bridge, having one pier in the center of the stream. The bottom is hard, and contains a great many shells. Tensas is about 175 feet wide here and 5 feet deep in the channel.

The place at the railroad crossing is Dallas; there are about 50 inhabitants, 8 houses, and 1 store. The owners are endeavoring to reclaim their places in this vicinity, and on the plantation on the south side of the railroad, owned by a Mr. Weightman, they are building levees about 6 feet in height to inclose the place. A small crop is also being raised, and if it should prove a successful experiment the adjoining places would also, in a short time, be in a state of cultivation. The last crop from the 6 plantations in this vicinity was 400 bales. The charge for transporting cotton to Vicksburg, a distance of only 28 miles, is $2.50 per bale. Before the war boats ran regularly up as far as the railroad bridge. From the bridge down Tensas is pretty straight—100 to 150 feet wide, and 10 feet deep. Six miles below Dallas, at Quebec, the bayou and railroad again meet, but do not cross. There is but a single house at Quebec. Very long horseshoe bends are now encountered, some of them being 15 miles long and only from ½ to 1 mile across the neck.

The Carter place, 1,280 acres, is 4 miles below Quebec on the same side of the bayou. About a mile further on the opposite side is the Hester place, 1,734 acres. Both the Carter and Hester places have good facilities for shipping any crop they might produce, but all are lying idle or given up to stock raising, owing to the heavy overflows. A small levee of about 3 feet in height would soon reclaim these places, but there seems to be a disinclination on the owners' parts to spend any money. There are some droves of cattle numbering as high as 500 head, and they readily find a market in Vicksburg during the fall and winter. There are several shoals in this vicinity with about 3 feet of water. The bottom is more sandy. The timber on the banks, which are high and sloping, is mostly composed of willow. Very frequently the bayou for sometimes a couple of miles will be full of long grass, which only grows on a sandy bottom. I noticed that as a general thing whenever the banks were covered with either cypress or willow, the bed of the stream was more apt to be full of snags and logs. Not long before I made this examination a hurricane had passed over this section of the country and had blown a great deal of timber into the bed.

The Sharkey place is the next one of any importance, and is 25 miles below Hester place. A small portion of it is being cultivated this year. A long bend, known as the Disheron's Bend, reaches almost around this place It then reverses into an equally long one and borders the Marshall place, 18 miles from Frisby's.

Fool's River, an inlet of about 4 miles in length, and 500 feet, wide without any current whatever, is 9 miles below the Marshal place. It is so called, as during high-water it has often misled pilots.

The next bend after the one bordering the Marshal place is known as Frisby's Bend, and borders the plantation of the same name. It is very full of snags and logs.

The Frisby place is the largest along the stream, containing 23,000 acres. It has a large steam-gin, saw-mill, and grist mill combined, a dwelling house, and numerous quarters for hands still standing. If it were not for the Mississippi River overflows this would be a flourishing place. Should these overflows be prevented it would take but very little to put the place in running order. Thirteen miles below this is the Westwood place, the present head of navigation, and the end of my first reach.

The bayou from Swan Lake to the Westwood place presents very little difference in appearance. It alternately narrows and widens, shoals and deepens, and the obstructions are of about the same nature, snags, logs, shoals, and towheads. Little or no land is being cultivated except in the vicinity of the railroad, which affords it a good outlet for its crops. The stock raised can also easily be driven to the railroad.

I can, therefore, not see any advantage to be derived, at present at least, by the improvement of the stream above the Westwood place. Should it, however, be desired, the following table will show the principal obstructions to be met with in the shape of snags, logs, and overhanging timber:

TABLE.

	Distance.	Width.	Depth.	Snags.	Logs.	Leaning timber.
	Miles.	*Feet.*	*Feet.*			
Lake Providence	164	200	10	.....	.....	.....
Swan Lake	152	120	15–20	35	10	100
Monticello Road	130	50	6	400	250	500
Roundaway Bayou	108	150	8	120	50	300
Dallas	88	175	4–10	200	120	150
Quebec	82	100	10	75	50	50
Carter Place	78	75	8	10	10	.....
Hester Place	73	75	10	15	25	.....
Alligator Bayou	53	120	6–10	40	60	100
Sharkey Place	48	100	8	25	25	.....
Marshall Place	30	100	6	100	20	.....
Fool's River	21	250	6	.....	.....	.....
Frisby Place	13	75	10	240	120	300
Westwood Place	0	100	12	120	70	.....
Total	164	.....	.....	1,380	810	1,500

SECOND STRETCH.

This stretch reaches from the Westwood place to the mouth, and is navigable during high water, the last trip having been made that far up last February. The boats, however, ran up to Mound Bayou as late as last April.

The Westwood place consists of 1,500 acres, a portion of which is being cultivated. It has a fine gin, dwelling-house, and quarters. They expected to raise 15 bales of cotton this season. The bayou is from 75 to 120 feet wide there; and several shoal places

both above and below are encountered. A small bayou called Mill Bayou comes in on the left bank, about 4¼ miles above Westwood place. The next place is the Buckner place of 4,000 acres, and at a distance of 5 miles from the Westwood place. This place also has a fine gin, dwelling-house, and quarters.

The banks on this portion of the stream are still high and sloping, and I estimated their height from 15 to 20 feet. The bottom seems to be mostly composed of sand, but occasionally you meet with clay.

Mound Bayou, 12 miles from Buckner's, is the second town on the river. It has several stores, a post-office, and about 10 dwellings, and directly opposite on the other side there are as many more. The country around here is more open, and more land is cultivated. They claim to ship from there 1,000 bales a year. Most of this is shipped by boat, two packets running regularly in this trade in high water season, and making 12 trips each. Some of the cotton is also hauled to Hard Times Landing, on the Mississippi, a distance of 22 miles. Most of the down freight comes in that way.

The Walker place, of 1,200 acres, is the next place, and distant 4 miles from Mound Bayou. Tensas here takes a sharp turn from its course, which was westerly, and goes due south. There is no plantation now until the mouth of Maçon is reached, a distance of 30 miles. This portion is called the Wilderness. It has high sloping banks on both sides, lined with heavy timber. The banks seem to be mostly of hard clay, having a great number of shells embedded in them. In this stretch the bayou is very winding, and after each bend it seems to widen out, and towards the lower end it resembles a series of lakes. The top of the banks seem to be covered with the same alluvial deposit as found above. High water marks I found varying from 2 to 6 feet above the surface of the ground. Before the Maçon empties into Tensas the latter widens out into a shallow lake about half a mile wide and several miles long. There are shoals at both ends and very near the center, where a small stream called Big-a-Planty Bayou, empties into it. The bottom of this lake is of hard clay, containing shells and also sand, and several small islands are formed.

Kirk's Ferry, 5 miles below mouth of Maçon, is the third town and post-office. It has two stores and several dwellings. Just above Kirk's Ferry is a second inlet also, called Fool's River, similar to the first. Choctaw Bayou, which is navigable at high-water, flows into Tensas immediately opposite Kirk's Ferry. About 1,000 bales of cotton is shipped in a year from this place, part of which goes down Tensas on boats, and the remainder is hauled to Waterproof Landing, on the Mississippi, a distance of 20 miles.

The distance between Kirk's Ferry and Trinity is 36 miles. The bayou between these points is pretty straight, and affords good navigation in any except extreme low water. From bank to bank it varies from 200 to 300 feet. The banks are high and sloping on both sides, and consist principally of clay, with some sand. The height gradually diminishes towards the Ouachita. The bottom is mostly composed of sand, with an occasional clay lump cropping up in the stream. There are numerous plantations on both banks, which yield very good crops; at Trinity I was told the total amount of cotton raised along the bayou would amount to 10,000 bales.

I obtained a list of all the shoals between Kirk's Ferry and Trinity, and sounded them as I went down, and they are as follows, with the depths found:

Shoals.	Distance from Trinity.	Depth.	Width.	Remarks.
	Miles.	*Feet.*	*Feet.*	
Alphenia Landing	33	7	150	Extend 30′ to 40′.
O. K. Landing	28	7	220	¼ mile long.
Kimball's Bayou	24	6	250	½ mile long.
Frenk's Bar	18	3½	175	½ mile long.
Cash Bayou	13	4½	175	
Brushy Bayou	10	4½	200	

The worst of these is at Frenk's Bar, and would require quite extensive dredging for very low water. These soundings must be diminished 2 to 3 feet for low water. Between Brushy Bayou and the mouth the river is rather difficult to navigate. Very frequently clay lumps occur in the middle of the channel. The current is also very much swifter than I found at any other place. On my way down I met the steamboat W. C. Flanders, on her way up to Kirk's Ferry. There she intended taking a load of seed and cotton, and come out with the first rise.

The backwaters out of the Ouachita, I was told, extended generally as far as Kirk's Ferry, and have been known to reach as high as Mound Bayou. During several low water seasons of Tensas, boats have been able to run up on these backwaters.

There are no levees along the banks of Tensas at all. One or two plantations are enclosed by private levees. In extremely rainy seasons this closing the plantations entirely in is almost as bad as an overflow, for all the rain that accumulates has no outlet whatever. I made several inquiries as to whether a complete set of levees had existed, but could not learn of any.

The following table will give distances, width, depth, nature, and amount of obstructions, between the mouth and Westwood Place.

	Distance.	Width.	Depth.	Snags.	Logs.	Leaning timber.
	Miles.	*Feet.*	*Feet.*			
Westwood Place	92	100	12	.....	.....	.....
Buckner Place	87	100	10	60	35	.....
Mound Bayou	75	175	15	70	40	100
Walker Place	71	150	12	100	25	.....
Macon	41	(*)	½ to 6	.....	.....	.....
Kirk's Ferry	36	175	14	....	.....	.....
Mouth	.....	200	12	500	70	.....
Totals	92	.....	.....	730	170	100

*One-half mile.

The are several tributaries in this reach and are named as follows: On the right bank—Cross, Roaring, Big-a-Planty, and Ha-ha; on the left bank—Roundaway, Glade, Mound, Bielers, Choctaw, Black, Little Tensas, Kimball's, and Brushy. Of these Choctaw and Little Tensas are navigable at high water.

High water mark I found all along the bayou and about 20 to 25 feet above surface of water.

Cotton is the principal product, and it is estimated that 10,000 bales of cotton and 70,000 sacks of seed come out of Tensas. Corn, wheat, and other products necessary for home consumption, are also raised. This with stock raising and rafting includes all exports.

To render low water navigation possible would require the expenditure of a greater amount of money than would be warranted; besides, the low water season occurs before the crop is ready to be shipped, and boats would not find business enough to pay for the trip. A great saving in freight charges would be effected should the river be improved—at least 75 cents to $1 on each bale of cotton. If boats were enabled to run regularly, a great deal more land would be cultivated, as planters could depend on getting their crops to market regularly.

My estimate is made for a stage of water about 3 feet above low water; this would enable boats to run about 8 months out of the year, if desired.

The logs and snags can be removed by a light-draught snag-boat, say of from 15 to 18 inches draught.

The clay lumps I think are sufficiently solid to be blasted apart, and the pieces can be readily removed with picks. In Tensas Lake a little dredging might be required.

ESTIMATE OF COST.

Cost of working party for 1 month:	
Engineer in charge	$150
Mate	100
Engineer of boat	100
20 men, at $40 per month	800
Subsistence 23 men, at 50 cents per day	345
Total	1,495
Building light-draught snag-boat	$3,500 00
Snag boat 5 months in field at $1,495	7,475 00
Tools and repairs	500 00
Removing clay lumps	1,000 00
Contingencies 10 per cent	1,247 50
Total	13,722 50

Very respectfully, your obedient servant,

H. C. WILSON,
Assistant Engineer.

Maj. W. H. H. BENYAURD,
Corps of Engineers, U. S. A.

EXAMINATION OF BAYOU MAÇON, LOUISIANA.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 1, 1880.

GENERAL: I have the honor to transmit herewith a report upon the examination of Bayou Maçon, Louisiana, with estimates of cost of improving same, made in accordance with act of Congress approved June 14, 1880.

The examination was made by Mr. F. S. Burrowes, assistant engineer, and extended from the headwaters of the stream, in Desha County, Arkansas, to its junction with the Tensas River in Louisiana.

In presenting the estimates for the improvement of the Maçon, I have not deemed it necessary to consider the upper section of the stream, extending as far down as Floyd, La., a point some 40 miles below the State line, from the fact that this section is so filled with snags, logs, stumps, and other obstructions that scarcely a skiff can be got through it, and the cost of making a navigable channel will be so greatly in excess of any benefits likely to be derived from its improvement. In addition, the proximity of the Mississippi River, to which the crops can be hauled, is likely to render the improvement unnecessary. I will, therefore, only consider the river from Floyd, the present head of navigation, to the mouth.

The examination showed that, like all streams in that section of the country, the main obstructions to navigation are snags, sunken logs, and leaning timber, the removal of which will constitute the principal work to be carried on with a view of improving the stream and of giving increased facilities for the shipment of cotton and the return of plantation supplies and other freights. Were any other system of improvement carried on, it would have to be by a system of locks and dams, which the commerce of the adjacent country would not at present justify.

Floyd is the only town on the Maçon. It is the county seat of West Carroll Parish, and contains about 250 inhabitants. The amount of cotton shipped from this point is said to be 3,000 bales. It is the present head of navigation, boats running regularly to the place about 5 months in the year. Some of these make round trips to and from New Orleans; others connect at Trinity with the Ouachita River boats.

The amount of cotton shipped from the bayou by steamer amounts to about 9,000 bales annually. Other amounts go by way of the Vicksburg and Shreveport Railroad to Delta, and thence by boat to New Orleans. Were the bayou improved, the running time of the steamers would be increased about three months, and nearly all the cotton raised would find an outlet through the river at reduced rates of freight.

The lands through all this section of Upper Louisiana are susceptible of a high degree of cultivation, but the breaks in the levee along the Mississippi front in Arkansas, while doing no particular damage to that State, cause the lands in North Louisiana to be inundated every high water. Were these breaks repaired, all the now abandoned lands in this section of the State would be brought under cultivation. This work, combined with the improvement of the streams like the Bœuf, Maçon, and Tensas, which would facilitate the shipment of the crops, would add greatly to the production of cotton and other crops.

The estimated cost of removing the obstructions from Bayou Maçon is $16,995.

The report of Mr. Burrowes, giving all the details of the examination, is annexed.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. F. S. BURROWES, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., November 11, 1880.

MAJOR: In compliance with your instructions of October 3, I have made a personal examination ef Bayou Maçon, Louisiana, in a skiff, from near its headwaters to its mouth, and herewith offer the following report of its present condition and probable cost of improvement.

The bayou heads in the lower portion of Desha County, Arkansas, thence runs through Chicot County, and enters Louisiana, forming the dividing line between East Carroll and West Carroll Parishes. It then divides Madison from Richland, enters Franklin Parish, and flowing through its entire length, enters Bayou Tensas at a point about 40 miles above Trinity, at its mouth.

On the right of the Maçon, from near its origin to within a few miles of its mouth, a range of low hills, composed of a hard ferruginous clay, covered with about 1 foot of alluvial soil, follows the bayou closely. These highlands, generally known as the Maçon Hills, are about 15 or 20 feet above high water, from 20 to 25 feet above the surrounding bottom lands, and from 5 to 10 miles wide. Being entirely free from danger of overflow, and the soil being rich enough to yield fair crops, these hills are very generally cleared and under cultivation, producing the great bulk of the cotton raised along the bayou. The bottom lands, although much more productive, are very little worked, on account of their liability to overflow.

The water in the bayou at the time of the examination, from the best testimony I could obtain from the inhabitants, I judged to be about 2 feet above its lowest stage, and falling, thus affording a good opportunity to observe the snags, logs, and other obstacles to navigation.

For convenience I will describe the bayou in detail in two parts, dividing it at the town of Floyd, and take up the upper portion first.

BAYOU MAÇON, ABOVE FLOYD.

Entering the bayou at Eudora Ferry, 4½ miles west of Grand Lake, Arkansas, on the Mississippi River, I examined it for about 10 miles above and found it about 70 feet wide, 3 feet deep, and so filled with snags, sunken logs, and large cypress stumps, as to make it almost impassable with a skiff. From this point to its source is quite a long distance, but it is so narrow, shallow, and filled with obstructions, that its improvement would be impracticable, and, from its close proximity to the Mississippi River, unnecessary.

Coming back to Eudora Ferry, and floating down, I found the distance to Floyd to be 70 miles by the bayou, and its general characteristics about as follows:

At Eudora Ferry the stream is 75 feet wide and continues this width with an average depth of 5 feet for about 10 miles, bending only at long intervals. At the end of this portion an island or bar 300 feet long has formed, which leaves a channel on either side 30 feet wide and 2 feet deep. After this is passed the bayou again assumes the same width and general lake-like character as above, and continues thus for a distance of 5 miles, when it becomes very crooked, narrow, and shallow. Down to this point there are about 20 large snags to the mile, besides a great number of sunken logs and several oak and gum trees stretching clear across the channel. The timber along this portion, composed of oak, hickory, gum, and pecan, is dense and continuous, and owing to the narrowness of the channel, forms an obstacle which would have to be removed to make it navigable. The bayou then continues crooked, narrow, and shallow, as far as Nash's Ferry, 35 miles below Eudora Ferry. This portion is filled with snags and sunken logs, which collect in the bends and form impassable rafts from 200 to 300 feet long. The timber along the banks also changes in character, becoming largely heavy cypress, which leans over the bayou, and which, together with the numerous large stumps of the same timber found in the channel, forms formidable obstacles to its improvement here.

Fifteen miles above Nash's Ferry and 4 miles below the line between Arkansas and Louisiana the Maçon is crossed by a road leading to Ashton Landing on the Mississippi River, which is only 2½ miles distant from it at this point.

Below Nash's Ferry the bayou widens to 150 feet, has a depth of 6 feet, is nearly straight, and singularly free from obstructions, both in the channel and on the banks. It continues thus for 15 miles. From this point to Floyd, a distance of 20 miles, it again becomes very crooked, narrow, and shallow, being only 100 feet wide and from 2 to 4 feet deep. The leaning timber on this reach, which it would be necessary to cut in order to make the bayou navigable, is very heavy and thick, without, however, including much cypress. The snags in the channel are very numerous, averaging about 25 to the mile, and the bed of the stream is a perfect network of sunken logs. These obstructions, along with a very swift current, make this portion difficult to navigate even in a skiff.

The bed and banks of the bayou above Floyd are composed of the same hard red clay as the Maçon hills, covered with from 3 to 5 feet of rich alluvial deposit. The banks are very uniformly 22 feet in height, and overflow from 6 to 8 feet at time of high water in the Mississippi.

There are a number of small tributaries to this upper portion of the Maçon, none of which, however, are of much importance. The largest are the following: Ditch Bayou, an artificial channel connecting the bayou with Lake Chicot, Arkansas; Rush Bayou, entering the Maçon at Eudora Ferry and connecting it with Grand Lake, Arkansas; Rowen Bayou, entering at Ashton Ferry and connecting the bayou with the Ashton break in the levees on the Mississippi River.

The water in the Maçon, I understand, reaches its lowest stage in the early fall, begins to rise about December 1, and remains from 6 to 18 feet above low water for about eight months thereafter. It never of itself rises sufficiently to escape from its banks, so that as long as the Mississippi levees opposite its headwaters were continuous, the bottom lands could be cultivated without danger of overflow. Since the breaks in the levees at Ashton, Matthews Bend, and Possum Fork, the Mississippi, at time of high water, pours into and floods this whole section; raises the level of the Maçon 30 feet above its present stage, and in fact turns it into a high water chute of the main river. For this reason farming along the bayou at the present time, except on the hills, is precarious and generally unprofitable.

In my opinion it would be inexpedient to attempt to make navigable any portion of the Maçon above Floyd, as, from the number and nature of the obstructions and the narrowness and shallowness of the channel, the expense of such improvement would be very great, and largely in excess of the benefits conferred on the country along it, for the following reasons:

First, as stated above, all or nearly all the land under cultivation along this portion of the bayou is on the hills, from all parts of which shipping points can be found within a reasonable distance, either at landings on the Mississippi or at Floyd on the Maçon.

Second, the improvement of this part would not increase the acreage under cultivation in the bottom lands, as they remain unimproved, not from want of a convenient shipping point, but, as stated, from their liability to overflow by the Mississippi.

BAYOU MAÇON, BELOW FLOYD.

Floyd, the only town on the Maçon, contains 250 inhabitants, and is the county seat of West Carroll Parish, Louisiana. It has 8 stores, a large steam-gin and sawmill, and, it is claimed, handles 3,000 bales of cotton yearly, most of which is shipped down the bayou by boat. It is the present head of navigation; boats running regularly to this point for five months in the year, beginning generally in the latter part of December and making the round trip from New Orleans in two weeks. There is seldom more than one boat at a time in this trade.

The following table shows the principal landings, distances, widths, number and approximate position of snags and sunken logs to be removed, and miles of bank to be cleared of leaning timber, in order to make the bayou navigable below Floyd at any stage of water 4 feet above that found during the examination. The leaning timber is given in linear miles of bank, as, from its nature, being mostly young, very dense, and growing down to the water's edge, it would be impossible to give an intelligent idea of its extent otherwise.

TABLE.

Landings.	Bank.	Distance.	Width.	Number of snags.	Number of sunken logs.	Leaning timber.
		Miles.	*Feet.*			*Miles.*
Floyd	Right	130	150	.....	.....	.....
Monticello	Left	124	200	30	16	.....
Epps's	....do	120	200	12	6	½
Lyons's	Right	117	250	8	8	.....
Shuwalter's	Left	112	300	20	16	.....
Purvis	Right	106	200	75	14	1½
Texas & Northern Louisiana Railroad	.....	100	150	75	18	1
Scott's	Right	95	100	60	22	2
Brim's Ferry	....do	89	350	50	5	.....
Campbell's	....do	85	300	20	10	.....
Roanoke Bend	Left	80	150	45	16	4
Chesterfield	....do	70	100	90	32	.....
Warsaw	Right	68	250	20	12	.....
Montgomery's	Left	66	200	20	8	1
Crockett's Point	Right	60	150	60	36	3
Egypt	....do	45	250	96	42	4
Brandon	....do	42	200	15	12	.....
Talbot's	Left	36	100	75	32	.....
Dixie	....do	28	150	74	32	4
Oakley	Right	22	100	80	27	2
Cut-Off	....do	16	150	75	23	2
Bend Emma	....do	8	200	100	32	3
Mouth	.....	.....	150	90	29	2
Total	.....	.....	.....	1,190	448	30

The bayou opposite Floyd is but 2½ feet deep and continues shoal and crooked for a distance of 5 miles, where it widens out into a sluggish lake, 6 to 10 feet deep, with straight stretches 2 to 3 miles in length, and continues thus to Shuwalter's. From here to Brim's Ferry its course is very crooked and the current very swift, with shoals not more than 2½ to 3 feet deep in the sharp bends. The leaning timber from Floyd to this point is mostly young and composed of hickory, gum, oak, pecan, and willow, with some little cypress. It grows down to the water's edge and in the bends forms the most formidable obstacle to navigation. The main banks here are steep and generally 25 feet high, overflowing 4 feet in years of extreme high water.

The composition of the bed and banks changes entirely between these points. A short distance below Floyd sand begins to show itself beneath the clay, and a little farther down the clay disappears entirely, leaving the bed and banks of the stream composed of compact sand, with a covering 4 or 5 feet of alluvial soil, and it continues of this character to the mouth of the bayou.

Below Brim's Ferry the Maçon is of a lake-like character, 300 feet wide, 6 feet deep, and nearly straight for about 6 miles, with few obstructions. It then again becomes crooked and shallow, with numerous snags, and the leaning timber in the bends, which obstructs navigation, very dense as far as Roanoke Bend. From Roanoke Bend to Chesterfield there are several long horse-shoe bends in which the channel is 150 feet wide, about 4 feet deep, and is fringed with light leaning timber, mostly willow, which a great part of the way interferes with navigation and would have to be cut. In front of Chesterfield it shoals to 2½ feet and continues thus 1 mile, when the depth increases to from 5 to 7 feet, and the bayou is then comparatively straight to a point just above Crockett's. Here a slide of the right bank has made a narrow shoal 3 feet deep, where a number of snags and logs have lodged. From Crockett's Point to Dixie the bayou is not so crooked as above, the bends being long and the current sluggish. The depth of water is usually from 5 to 7 feet, with the exception of the sharp bends, where it invariably shoals to 2½ or 3 feet. From Chesterfield to Dixie the Maçon is lined most of the way on both sides by old plantations, which are either entirely abandoned or worked on a very small scale, so that the leaning timber, although dense, is generally young, a large part of it being willow.

From Dixie to the mouth the stream is generally very crooked, the snags and logs very numerous and large, and leaning timber, consisting of oak, hickory, gum, cypress, and willow, much heavier and more expensive to remove than above. There are a number of shoals on this part, 2 to 3 feet deep, rendering it fordable every 3 or 4 miles. The current here is also much swifter than above, with the exception of one sluggish lake, 3 miles in length, just below Bend Emma.

The Maçon empties into Bayou Tensas at a point where the latter stream spreads out into a shallow lake about 1 mile wide.

The general character of the banks on the lower portion of the bayou is the same as above, being 25 feet in height, and overflowing from 3 to 5 feet by the water escaping through the breaks in levees along the Mississippi opposite the headwaters of the Maçon.

The only important tributary entering below Floyd is Joe's Bayou. Its source is about 15 miles above Floyd and is connected near this point with both the Maçon and Tensas at high water. It then pursues a course about midway between these bayous, emptying into the Maçon at Brim's Ferry, and having a width of about 75 feet at its mouth. From Monticello to the mouth of Joe's Bayou the left bank of the Macon is high and overflowed only at times of extreme high water, so that the land along it could be, and a portion of it is, protected by levees 3 feet in height.

The Texas and North Louisiana Railroad crosses the bayou between Purvis's and Scott's, on a drawbridge which leaves a channel span for boats, 50 feet in width. Delhi, on this railroad, is about 1½ miles west of the bridge and is at present the shipping-point for most of the cotton made on the Maçon Hills in its vicinity.

The landings on the right bank as far down as Cut-off are at places where the hills come down to the bayou, and thus are shipping-points for a large section of country back of them.

At Cut-off Landing there is a high-water connection with the headwaters of Deer Creek, by which at times the water of the Maçon escapes to the Ouachita River. The section of country from here to the mouth of the Maçon, and bounded on its other sides by Deer Creek, Ouachita River, and Bayou Tensas, is known as Sicily Island. It is generally low, a part of it being submerged at time of high water.

The section of country between Floyd and the mouth of the Maçon is said to ship yearly by boat 9,000 bales of cotton. This amount of course varies greatly with the time navigation opens. In case the season is late the planters, finding it desirable to turn their crops into money, haul long distances either to the Mississippi River or to points on the railroad, thus getting most of the cotton out of the country before the boats begin to run. The increase is of course proportional if the season is early. Carrying cotton, cotton-seed, and corn out, and the necessary planters' supplies in, is about the only traffic of the boats running in the Maçon.

As stated above, the obstructions given in the table are only those which would interfere with navigation at a stage of water 4 feet above that found during the examination, and the estimate given is based on the opening of navigation at such a stage.

This would open navigation to Floyd at least one month earlier, would continue it two months longer, and render it much more secure at all times than at present. Such improvement would cause all or nearly all the cotton raised on the hills to be shipped by boat, and would very likely largely increase the acreage under cultivation in the bottoms, as early and safe navigation would render it profitable for individuals to protect their land.

This is all I would recommend to be done, as to undertake to make the Maçon navigable at low water would, on account of the great number of shoals, sunken logs, and low water snags, require an immense outlay, and could not be accomplished at all without some very expensive system of dams and locks.

ESTIMATE.

Expense of snag-boat and crew for one month:	
Engineer in charge	$150 00
Engine driver	60 00
Cook and cabin boy	60 00
Twenty-five men, at $35 per month	875 00
Subsistence 29 men, at 50 cents per day	435 00
Fuel, oil, waste, &c	150 00
Total	1,730 00
Cost of light-draught snag-boat	$3,500 00
Five months' work for snag-boat	8,650 00
Three months' work for chopping party, consisting of 20 men and foremen	3,300 00
Contingencies, 10 per cent	1,545 00
Total estimated cost of improvement	16,995 00

This work can only be done to advantage at a very low stage of water. The snag-boat estimated for is therefore a light flatboat, having steam drum and quarters for men, and should not draw more than 18 inches of water.

Respectfully submitted.

F. S. BURROWES,
Assistant Engineer.

Maj. W. H. H. BENYAURD,
Engineer Corps, U. S. A.

EXAMINATION OF CURRENT RIVER, FROM VAN BUREN, MISSOURI, TO ITS MOUTH IN ARKANSAS.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 1, 1880.

GENERAL: I have the honor to submit the following report upon the examination of Current River, Mo., made in compliance with the act of Congress approved June 14, 1880, and assigned to me by department letter of June 17, 1880.

An examination of this stream was made in 1871 by Mr. A. H. Blaisdell, under the direction of Lieutenant-Colonel Raynolds, and upon the report then rendered an appropriation of $5,000 for the improvement of that portion of the stream in the State of Missouri was made by act of Congress approved June 10, 1872.

Having an assistant, Mr. George R. Wilson, at work on Black River, Arkansas, into which Current River empties, I directed him to proceed to Van Buren, Mo., and to make a thorough examination of the river from that point to its junction with the Black. From this examination and from the report above alluded to, sufficient data have been obtained upon which to base estimates for the improvement of the stream.

Current River has its source in Texas County, Missouri. It flows through Shannon, Carter, and Ripley Counties, Missouri, and Randolph County, Arkansas, and discharges into Black River (a branch of the White) a short distance above Pocahontas. It has a number of small and unimportant tributaries, the drainage area of all combined being estimated at about 2,000 square miles. During ordinary stages of the river these tributaries furnish about two-thirds of the volume of water in Current River, the remaining one-third coming from a large spring some 30 feet in diameter, situated about 7 miles below Van Buren. According to Colonel Raynolds, a rough gauging of this spring showed a discharge of over 500 cubic feet per second.

The length of the river by the channel from Van Buren to its junction with the Black is estimated at 117 miles. The width varies from 150 to 250 feet, except in a few narrow places. The oscillation of the river between high and low water is about 13 feet.

Steamboats navigating Black River ascend Current River usually only some 30 miles, though at times they go as high as Jones's Ferry, 80 miles above the mouth.

SHOALS AND OBSTRUCTIONS TO NAVIGATION.

From Van Buren to Jones's saw-mill, a distance of 37 miles, there are 38 shoal places, with water over them varying from 0.8 of a foot to 2 feet. The average length of these shoals is about 200 feet. From Jones's Ferry to Doniphan, a distance of 12 miles, there are 6 shoal places similar in character to those in the stretch above. There are also two rapids with water over them from 3.5 feet to 4 feet, the rapids nearer Jones's mill being about a mile long, with a current of upwards of 6 miles per hour, but with good water the entire distance.

From Doniphan to Pittman's, at the State line, a distance of 14 miles, there are 4 shoals and 6 rapids.

From State line to Downing's Ferry, 14 miles, there are two shoals and two cut-offs. The shores are very bad, extending entirely across the river with but 0.8 foot over them at low-water. Of the cut-offs, the upper, called Wilson's Chute, is 1,500 feet long, with a fall of over 6 feet, full of

logs and trees piled up in all directions. The lower cut-off is about 250 feet long, with a fall of 3 feet, and also full of logs, &c.

From Downing's Ferry to McElroy's, a distance of 28 miles, the river is a clear, open stream, almost free from snags, shoals, and rapids, and with water in no place of a depth less than 6½ feet. Nothing exists in the way of obstructions, except overhanging timber.

From McElroy's Ferry to the mouth, 12 miles, the river is free from shoals and rapids, but full of snags, &c., and the banks are lined with overhanging timber.

PREVIOUS SURVEYS AND IMPROVEMENTS.

In the year 1857 an approximate compass survey was made from Jack's Ford, 37 miles above Van Buren, to the State line.

In 1855 the State of Missouri appropriated $10,000 for the improvement of the stream, but no good seems to have been effected. In 1871 the State made another appropriation of $20,000 for continuing the work.

In 1871 an examination, with a view to the improvement of the river, was made under the direction of Colonel Raynolds. Upon the report then rendered, Congress, in 1872, appropriated $5,000, which was expended upon that portion of the river above the State line, in building dams, removing snags, and cutting down overhanging timber.

COMMERCIAL STATISTICS, &C.

Carter County, of which Van Buren is the county seat, contains over 450 square miles. There are about 100 small farms, and 400 voters in the county. The amount of wheat raised in the county is about 12,000 bushels, corn 36,000, most of which is for home consumption. The only article of export seems to be pine lumber, which is floated out in rafts from above Van Buren.

Ripley County embraces an area of over 600 square miles. There are about 550 farms, raising 55,000 bushels of wheat, 110,000 bushels of corn, and a small crop of cotton.

The county seat, Doniphan, would command quite a large trade, if the navigation were good, as all the products of Oregon and Howell Counties (which are each one-third greater than Ripley) would pass down the river, instead of over bad roads, to the railroad at Pocahontas or Poplar Bluff.

The country along the river in Arkansas is well settled on both sides for a short distance back, but on account of the insufficiency of water transportation, the inhabitants are compelled to ship their products to Corning or Pocahontas. At present the lumber interest seems to be the important one of the region traversed by the river.

Numerous saw-mills are along or near the stream, and it is estimated that upwards of 1,000,000 feet of lumber and 500,000 feet of logs are rafted out annually.

IMPROVEMENTS PROPOSED.

On that stretch of the river from Van Buren to Jones's Ferry, 37 miles, it was formerly proposed to build dams at the shoal places, so as to confine the water to a single channel, and the inhabitants desire this method of improvement to be carried out. This would undoubtedly give good water, but it is probable that no steamboat likely to navigate the river could ascend.

The river takes its name from the rapidity of its current.

The appropriations made by the State of Missouri, and by the government, were expended in building dams at the heads of the islands forming the shoals, so as to concentrate all the water in a single channel, but the first rise following took everything out; not a vestige of the work remains at the present time. It is not deemed advisable to recommend any improvement of this part of the river. The cost would amount to more than the resources of the country would at present justify.

From Jones's Ferry to Doniphan, 12 miles, the two shoal places can be readily improved by wing-dams of brush and stone at a cost of $750 each. . The rapids, having plenty of water over them, need no work.

In the stretch between Doniphan and the State line, the four shoals can be improved by similar constructions as above. Merrill's Shoal, the worst of the four, will cost about $1,200; the remaining three, $600 each.

From the State line to Downing's Ferry the two shoals are very bad, extending entirely across the river. The dikes here will cost not less than $1,200 each. For the improvement of the cut-offs, it is deemed advisable not to work in the cut-off directly, but to clear out the old bends of the river, close up the chutes, and force the river to take its old course. The estimated cost of this is $3,000.

From Downing's Ferry to the mouth, the work of improvement will consist in removing snags and cutting down leaning timber along the banks. It is estimated that this work can be done for $200 per mile from mouth to McElroy's, and $100 per mile from McElroy's to Downing's Ferry, or $5,200 for this stretch of the river.

The total amount, as above, will be	$15,100
15 per cent. for contingencies	2,265
Estimated cost of improvement	17,365

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

SURVEY OF HARBOR AT GRAND GULF, MISSISSIPPI.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 12, 1880.

GENERAL: I have the honor to transmit herewith a report upon the survey of the harbor of Grand Gulf, Mississippi, and the Mississippi River in the vicinity, in accordance with act of Congress approved June 14, 1880.

The survey was made by Mr. H. St. L. Coppée, assistant engineer, and party, and extended from a point in the Mississippi River at Brooks' Landing, on the bend above Grand Gulf and Hard Times, to the foot of Duke's Towhead, 6 miles below the landing for the Port Gibson Railroad. The total length of the survey was 17 miles. It embraced also the Louisiana shore, and all intermediate land between the upper and lower limits of the survey; the old and new channels; the lower section of Big Black River. Twenty-six cross-sections of the main

river and the old and new channels were made, and the slope and discharge of the river were also determined.

By reference to the accompanying map of the survey, the past and present condition of affairs in the vicinity of Grand Gulf can be readily understood.

As late as 1864, it will be seen by the dotted blue line, which shows the positions of the Louisiana and Mississippi shore-lines at that date, that the Mississippi, after leaving Hard Times, swept around the bend directly in front of Grand Gulf Landing, giving to that place a good and sufficient depth of water for all navigation purposes. In the bend just above the town the Big Black River debouched into the Mississippi. Changes which took place in the Mississippi above brought corresponding changes in the channel below and in the situation at Grand Gulf. As the eroding action of the Mississippi continued around Hard Times Bend, the filling up in front of the landing and around the Grand Gulf Bend likewise continued; at the same time the bank at the lower end of this bend was being eroded, and caused an accretion to the end of Coffee Point opposite. This eroding and filling up continued down to 1875, at which time an extensive bar had formed in front of Grand Gulf, and the landing had to be moved down to about its present position at the Port Gibson railroad landing. Big Black forced its way through the deposit, adding some three miles to its length, while Coffee Point, Louisiana, at the same time was extended some considerable distance towards the Mississippi side.

In 1875 the Mississippi River forced a channel across Coffee Point or Neck, which since that time has widened considerably and is now the main channel of the Mississippi River at that place, leaving an island between the old channel and the cut-off, known as Grand Gulf Island. At the present time the situation at Grand Gulf and vicinity may be briefly stated as follows:

The caving in Hard Times Bend on the Louisiana side has been very considerable, while at the same time an extensive deposit has taken place in Grand Gulf Bend, extending from about a mile below the old landing (*i. e*, from the present railroad landing), around to Thrasher's Point to the northward, so that Grand Gulf Harbor may be said to have been filled up. The new channel formed by the cut-off through Coffee Neck, has widened and deepened to such an extent that it is now the main channel of the river; the old channel in the mean time has been partially filled up, the north passage particularly, so that at an ordinary low water stage, boats going north and south wishing to approach Grand Gulf Landing are compelled to go and return to the main channel via the channel south of Grand Gulf Island. In high stages of water they can approach the landing by either channel. This filling may continue and result in the complete destruction of the old channel, though judging from the caving of the main channel along Grand Gulf Island (which is composed wholly of sand), it is possible that the river may so cut into and destroy a portion of this island, as to eventually bring the channel back to somewhat near the position it had prior to the cut-off through Coffee Neck.

To restore the landing at Grand Gulf and have the same again upon the Mississippi River, a proposition that has received favor among those particularly interested in the matter, is to start on the Mississippi River at some point below Brook's Landing—the head of the survey—and to cut a canal or ditch across the neck, taking in possibly Alligator Lake, and coming out say near the present landing. This scheme which involves also the damming of Big Black, it is supposed, will bring the

river back to its old bed near the point of rocks and give to Grand Gulf a permanent harbor.

The stretch of country through which it is intended to lead the ditch is at present but little cultivated, with possibly the exception of the Yucatan place. Otherwise, most of the land is a vast heavily wooded swamp, unprotected by levees, and entirely overflowed at high-water.

It has been suggested by those in favor of the canal project that it would only be necessary to dig a ditch of small dimensions across the neck, and allow the river to complete the remainder of the work. This is doubtful. Mr. Coppée has estimated for a large cutting, extending in depth below the stratum of blue clay and exposing the sand. The total excavation amounts to 2,392,700 yards, at an estimated cost of $1,054,780. Even this would be of doubtful utility, and the cutting would probably have to be aided by additional works, so as to train the current into the made cut, for, although the head of the proposed ditch is located on a caving bank, its general direction is at right angles to the current of the river. Should the work be executed, it would also be necessary to dam Big Black River, so as to prevent the new channel from taking a direction out through the mouth of that stream. Independent of all the expense attending the engineering operations, there will necessarily, also, be prospective damages, arising from the destruction of private property on account of the cut.

The question may be asked, what is the object of the contemplated work? It is to restore to Grand Gulf its former landing on the Mississippi River, and that only, at a considerable expense. In itself, commercially, Grand Gulf is a place of no particular importance. It was, and the lower landing now is, a shipping point for the products of the country back. It is also the terminal point on the river of the Port Gibson Railroad, this town being distant about 8 miles. According to the best information that could be gathered, the total shipments from Grand Gulf for the twelve months ending August 31 were estimated in value at $837,000. Probably more than two-thirds of the products came over the railroad.

Now, while the proposed change, if made, will benefit Grand Gulf and the surrounding country, it will be a detriment to that portion of Louisiana lying directly opposite, that is, as regards the facility for the shipment of crops, &c. Hard Times Landing is the outlet for the products of a rich and highly cultivated country back. The total value of the shipments from that place, for the same period as above, was $538,000. Hard Times is situated on a caving bend, and the change would probably be a benefit to that point, but it would cut off the entire surrounding section from its present outlet, and cause the people to seek another landing from which to ship their products.

At the present time, the old channel affords sufficient depth and width for all boats to get to the landing at Grand Gulf, even at the lowest stage of the river. It is, however, filling up gradually and may continue so to such an extent, as to be eventually destroyed, except as a high water channel, if the changes now taking place in the west bank of Grand Gulf Island do not continue, so as to force the channel back to near its old position. By reference to the map it will be seen that the current of the Mississippi River impinges directly against said bank with considerable force, and tends to destroy it. Between March and September it had caved away some 900 feet at its lower end, gradually decreasing up stream, and judging from present indications this caving is likely to continue, with the likelihood as above mentioned.

At all events, should it be desirable for the railroad to secure a land-

ing so as to be able to connect with the steamboats, it would only be necessary to change the direction of their line on coming out of the ravine, and run southward, as shown by the dotted line on the map, instead of northward to the present landing. There are no special difficulties in the way; the grade of the road would have to be kept above high water mark. This change could be made and a landing secured, at any point on the lower channel, as circumstances would demand, at a cost to the railroad that would be very small in comparison with the amount that the government would be required to expend in making the proposed change, and at the same time the shipping interests of the Louisiana country opposite would not be jeopardized.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. H. ST. L. COPPÉE, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 8, 1880.

MAJOR: Having made a thorough examination of Grand Gulf Harbor, Mississippi, during the months of August and September of this year, with the assistance of Messrs. F. S. Burrowes and H. C. Wilson, as you directed, I have the honor to submit the following report, accompanied by a map of the vicinity, profiles, sections, &c.

My first care on arriving at Grand Gulf was to establish a water-gauge at the town landing, and also two others above, which I shall mention hereafter in connection with the slope of the river.

By a comparison of the guage readings at Natchez and Vicksburg with those obtained at Grand Gulf Landing, I have been enabled to establish the low water mark of 1872 at this place, which I call the zero of the gauge. This I proved to be practically correct by means of levels run to an established high water mark of 1867. The oscillation thus determined is 49½ feet.

The accompanying map shows the general features of the river, which I examined in connection with the harbor survey, leaving but little to explain.

All my levels, as stated in a note on the map, can be referred to a bench on the turntable of the Grand Gulf and Port Gibson Railroad, established and used by the Coast and Geodetic Survey March, 1880.

The country lying on the Mississippi side through the entire reach from Brooks' Landing to the end of Duke's Towhead, is at present very little cultivated, with one exception, that being Yucatan Place, which was planted last season by numerous colored men, each making a small crop of cotton. Otherwise most of the country between the hills or bluffs and the river is a vast, heavily-wooded swamp, entirely overflown at high water, as shown on the map and profiles, and is unprotected by levees, the only remaining signs of an attempt at such protection being the old pieces of Yucatan levee, which at one time relieved that plantation from the evils of an overflow.

The country on the Louisiana side differs from that in Mississippi, in that it is completely protected by levees, the approximate positions of which are shown by a black dotted line on the map.

The land in many places immediately adjacent to the river is overflown, but a short distance back from the bank are levees, which, at the time of this survey, were in good order, having been repaired or newly built during the summer.

The soil is, as represented on the map and profiles, of many varieties and combinations—sand and mud bars, buckshot swamps, high deposit banks, &c. By a comparison of the results of 16 different observations, I found, as a general rule, the subsoil throughout the reach, on the mainland, to be composed of the following strata, and lying in the following order: Alluvial sandy deposit on the surface, then buckshot, then a tenacious, tough, blue clay, reaching in places to low water and below, and resting on sand. These strata differ in thickness and inclination in different localities, but their general order remains the same. In places the surface covering of sand deposit has apparently been washed away, leaving buckshot exposed, but in every in-

stance I found tough, blue clay to exist somewhere between 8 and 16 feet below the surface.

Grand Gulf Island differs from the surrounding high land in that it is composed purely of a sandy deposit, clay and buckshot showing in no instance on the surface or caving sides; this can be readily accounted for by a glance at the old river lines of 1864 (red dotted), taken from a map made under the direction of Admiral Porter in that year.

The bluffs about Grand Gulf are composed, to a great extent, of friable sandstone and hard-pan; this well might be used in river improvement for sinking mattresses, &c.

The timber throughout the region is valuable; the cypress brakes contain a good quality and great quantity of that wood. The other varieties of timber also found in quantity are oak, hickory, pecan, elm, sycamore, gum, hackberry, cottonwood, and willow, and a scattering of thorn, ash, magnolia, walnut, china, &c. Great quantities of young cottonwoods and willows cover the numerous towheads and bars, as shown on the map.

In 1875 the cut-off, which at present is apparently tending to sever the harbor of Grand Gulf from river communication with the outside world, existed in the form of a canal across Coffee's Neck, when bank full 400 feet wide by 1¼ miles long. The gradual wearing of the water during its high stages, and finally at all stages on this ditch or canal, has at the present date brought it to the dimensions as shown on the map and profiles. The result of the forming of this cut-off is a very gradual filling up of the old main river bed in front of the town of Grand Gulf. This change, as shown by comparing sections sounded in September with those sounded by the Coast and Geodetic Survey six months previous, is very gradual in many places; indeed the tendency has been to scour rather than deposit, as would have been supposed. At the present date the old river, from the mouth of the Big Black to its confluence with the main channel again, has a channel depth in extreme low water varying from 14 to 30 feet. The channel, as seen by the profiles, has a sufficient width in which to turn and maneuver the largest river boats; at the upper end, though, near station P, the low-water channel is but 6 feet deep; this channel, which saves considerable distance in approaching the harbor from the north, is unnavigable for the large steamers at a stage of 10 feet on the gauge; this is more due to the great quantity of low-water snags which have settled here than a want of sufficient depth of water. The Big Black River, though a very insignificant stream, as shown by the accompanying discharge table aids, to a great extent, in keeping open the lower end of the old river.

The following tables show, respectively, the slope, the discharge, and the changes in slope for changes in the gauge readings.

The slope I obtained by running a line of levels from one end to the other of the reach surveyed, taking the elevations of the water at known intervals and correcting for the reading of the gauge at the time of leveling. The velocities, discharges, &c., were obtained by running floats (such as used by your observation parties in 1879) at mid-depths of the stream over a sounded section a distance of 200 feet. The third table is merely a comparison of the three gauges during the rise and fall of the river in August and September, and their bearing on the slope.

TABLE.

Between stations.	Distance.	Fall.	Slope per mile.	Remarks.
	Feet.	*Feet.*	*Feet.*	
A and C	5,575	0.271	0.255	Main river from Brook's Landing to head of cut-off.
C and E	8,217	0.377	0.242	
E and G	5,351	0.302	0.298	
G and J	6,534	0.336	0.271	
K and N	9,300	0.430	0.244	
V and X	5,182	0.037	0.038	Slope in old river.
X and Z	4,480	0.032	0.038	
A′ and B′	8,229	0.311	0.200	From foot of cut-off to south end of survey.
B′ and D′	3,830	0.225	0.310	
N and Z	6,000	0.164	0.144	Through cut-off.
C and Gauge 3, Grand Gulf Landing.	19,800	1.694	.....	This distance is measured in a direct line.
Big Black, from ferry to Station 12.	3,429	0.140	0.213	Taken September 18, meander line.

Table of areas, discharges, and velocities.

Section.	Area.	Discharge per second.	Mean velocity per second.	Remarks.
	Square feet.	*Cubic feet.*	*Feet.*	
I	110,000	285,000	2.60	From Brook's landing to head of cut-off.
III	76,000	285,000	3.75	
V	84,000	285,000	3.40	
VII	59,500	285,000	4.80	
IX	73,500	275,000	3.76	In cut-off.
XVI	7,300	10,000	1.37	Old river.
XIX	32,000	16,800	0.53	
XXV	21,000	16,800	0.80	
Big Black	5,000	6,000	1.20	Big Black.
XIII	76,800	291,000	3.80	Below Whitehall.

TABLE.

Gauge (1) situated opposite Station J, on main river, 19,300 feet above Gauge (2).
Gauge (2) situated on main river, at head of cut-off, 8,500 feet above Gauge (3).
Gauge (3) situated on Old River at Grand Gulf Landing.

Date.		Gauge readings.			Remarks.
		Gauge 3.	Gauge 2.	Gauge 1.	
August	24	12.3	12.3	12.3	A. m.
	24	12.1	12.1	12.0	P. m.
	25	11.8	11.8	11.7	Falling water.
	26	11.5	11.4	11.4	
	27	11.2	11.1	.....	
	28	10.8	.....	.....	
	30	10.1	10.0	.....	
	31	9.7	.....	.....	
September	2	10.2	.....	.....	A. m., rising water.
	2	10.3	10.2	.....	P. m.
	3	10.3	10.3	10.2	A. m.
	3	10.4	10.4	10.4	P. m.
	4	10.6	10.6	.....	
	6	.....	11.4	11.4	
	8	12.7	12.7	12.7	
	9	13.0	13.0	.....	
	10	13.3	.....	.....	Rising water.
	11	13.7	.....	.....	
	13	14.3	.....	.....	
	14	14.8	14.8	14.9	
	15	15.0	15.1	15.1	
	16	15.2	15.2	15.2	
	17	15.3	15.2	.....	
	18	15.5	.....	.....	
	20	15.3	.....	.....	
	21	15.0	.....	.....	
	22	14.4	.....	.....	
	23	14.2	.....	.....	
	24	13.6	13.6	13.5	
	25	.....	.....	13.3	A. m.
	25	12.5	.....	12.5	P. m. Falling water.
	27	11.7	11.6	.....	A. m.
	27	11.5	.....	.....	P. m.
	28	11.3	11.3	.....	
	29	11.0	11.0	.....	A. m.
	29	10.8	10.8	.....	P. m.
	30	10.6	10.5	.....	
October	1	10.1	10.1	.....	

This table shows little or no change of the slope between the gauge readings during the time of the above observation, though during the decline of the water a slight diminution might be inferred.

The fluctuation (5.8 feet) was too small to show much variation.

I have marked in black figures on the map the soundings in the cut-off as taken from a map made under the direction of the Coast and Geodetic Survey; these I have referred to the same water as my own soundings for convenience of comparison. It will readily be seen that from the time, in March, 1880, when the former were made, until I sounded the same ground, a considerable change has taken place, in some instances the difference being over 40 feet. In other words, during the six months previous to September, the water in the "cut-off" has deepened in places over 40 feet.

This change was probably effected during low water, or the transition from high to low water. The present low water channel, as per profiles, is as deep as 77 feet. The tendency of the force of the current in this vicinity seems to be to demolish Grand Gulf Island, by impinging on the loose deposit composing its western banks. At every other point in the reach, the caving is very much less. At Hard Times, 60 feet in a year is the average. At Station I, probably 200 or 300 feet in the same time; the bank at Station C also caves considerably; but in no place does it compare with the destruction of Grand Gulf Island, as shown by red dotted line on the map.

Before suggesting any plan of improvement I shall give, to the best of my ability, the general commercial statistics of the principal shipping points and regions which would be affected by any contemplated change.

Grand Gulf, which, in 1850 and later, was a flourishing town of nearly 700 inhabitants, with one of the best harbors on the Mississippi River, contains, at the present time, about 100 people, mostly colored. The produce or business of the town and country off the railroad which connects Grand Gulf with Port Gibson amounts to nominally nothing. Grand Gulf, though, is the terminus of this Grand Gulf and Port Gibson Railway, which starts in the town of Port Gibson, situated 8 miles inland on Bayou Pierre. Port Gibson, and a great extent of the adjacent country, depends entirely on the harbor of Grand Gulf, or the landing at the river end of the road, for its supplies and means of shipping produce. Should the arm of the river forming the present harbor be closed by a deposit of silt, owing to the sluggishness of the stream, to insure an outlet, either the river end of the railway will have to be moved to a new and safe landing, or the river, by engineering skill, returned to its old bed.

It is the idea of the gentlemen who have at interest the welfare of Port Gibson and the rich country which would be ruined without river communication with New Orleans and Vicksburg, and through whose influence this survey was obtained, to arrive at the feasibility of cutting a canal from some point near Station C to the old mouth of the Big Black, which it is supposed will carry the river back into its old bed near the point of rocks, and give to Grand Gulf once more a good, permanent harbor.

Should this be accomplished the effect would be very detrimental to the commerce of all that country on the Louisiana side bordering on the present river bank between stations C and N—Lloyd's, Ship Bayou Place, and Hard Times—the latter landing being of great importance to the lands on Lake Saint Joseph, and as far back as the Tensas, which it supplies in low water. The following are the commercial statistics of the two places, which are the bases of supplies and outlets for the produce of their respective regions, to wit, Port Gibson and Hard Times.

COMMERCIAL STATISTICS.

Port Gibson.

Port Gibson is 40 miles by stage from the New Orleans and Jackson Railway, contains 1,400 inhabitants, and ships for a region within a radius of 30 miles. The railway connecting it with Grand Gulf is of ordinary gauge, has 1 passenger coach, 6 freight cars, 2 locomotives, &c.

For the 12 months ending August 31, 1880, shipped from Port Gibson, 14,512 bales cotton; sacks seed, 18,000; merchandise, $2,000. Received by railway, 6,000 barrels pork, 7,500 barrels flour, 10,000 barrels meal, 16,000 sacks corn, 1,400 hogsheads meat; other merchandise, ——.

Including Grand Gulf and intermediate points on the road:

Total shipped at Grand Gulf, 16,000 bales cotton, at $50	$800,000
20,000 sacks seed, at 60 cents	12,000
Merchandise	2,000
Total received at Grand Gulf	814,000
Merchandise at Grand Gulf, about	23,000

Hard Times.

Hard Times, as stated before, is the shipping and supplying point for all that country lying adjacent to Buck Ridge and Lake Saint Joseph, and in low-water as far back as the Tensas River.

Shipped, per annum, 10,000 bales cotton	$500,000
27,000 sacks seed	16,000
1,500 packages sundries	2,000
Total	518,000
Return merchandise, 40,000 packages, various values	20,000

Had the improvement of this harbor been attempted a few years ago, before the cut-off had arrived at its present dimensions, this work would have been but light and inexpensive; as it is, the cost of bringing the river through a canal back to Yucatan Place will be very great, and the absolute permanency of its bed not insured.

The following is a rough estimate of the cost of a canal and temporary works to give it the proper course:

Canal from Station C to ferry at Big Black River: Material to be removed to sand below strata of blue clay; blue clay about 20 feet thick at upper end; buckshot 10 feet thick at upper end. Dimensions of canal: $26' \times 200' \times 12{,}000'$ in length = 2,310,000 cubic yards of material, in great part clay and buckshot, at 30 cents per yard, including clearing and grubbing. This is a very low estimate, taking into consideration the amount of heavy clearing and tough material through which it is necessary to cut.

Total cost from C to Ferry, $693,000.

From Ferry on Big Black to near Gauge No. 3, Grand Gulf Landing: Dimensions of canal $10' \times 200' \times 9{,}600'$ in length = 71,000 cubic yards of material. This could be removed in great part by dredge-boat from lower end and at a much less cost, being a soft deposit and mud; 71,000 cubic yards, at 15 cents per yard, $10,700.

Should the stratum of clay become deeper at the lower end the cost would be increased by the necessary deeper cut and *vice versa* should it tend to run out. It will be seen by examining the map that the direction of the current above station C, and indeed for a great distance above Brooks's Landing is nearly parallel with the Mississippi shore. To come appreciably nearer the direction of the current it will be necessary to change the course and build at least a mile more of canal than the estimates are made for. This, at the same price, 30 cents per cubic yard, would be $351,080.

From C to Ferry	$693,000
From Ferry to Gauge 3	10,700
Extra mile to be added	351,080
Total cost, without dams, &c	1,054,780

The route might be through Alligator Lake, but with little saving, the lake being very shallow.

This amount may be considerably increased by works to turn the channel from its present course into the new bed, which would have a fall of 0.45 feet per mile. It would also be necessary to dam the Big Black at or near the point of junction with the canal so as to utilize its water and insure against all possibility of divergence from the new channel.

I have probably underestimated this plan of operations both as to the dimensions of the canal and general cost of the work.

I have proposed to cut only to the bottom of the strata of clay, leaving the river to complete the work, whereas it may be found necessary to dig some distance below the low water mark.

The gentleman who had contemplated this project thought that a small ditch could be made across the neck of land and the river at once would do the rest of the work; the erroneousness of this idea will be seen at once by a slight study of the map and a comparison of even a 200-foot canal with the present bed of the river. It is possible that the river would run through and dig out a water-way were it constructed as per estimate, but very improbable without great additional expenditure on works, dams, &c., to turn and control the main force of the current.

It will be unnecessary to make a more detailed estimate to show the impracticability of the above project. It might be suggested that works at the head of the cut-off would reclaim the old harbor but for many reasons, chief among which is the expense, it would be unwarrantable. I would respectfully suggest that as the filling up of the harbor at Grand Gulf is not very rapid and the cutting away of Grand Gulf Island is just the reverse, that by leaving the river to take its own course, at the time it is necessary to look for a new landing one may be found on the main river not a great distance below the present site and to where the Grand Gulf and Port Gibson Railway could be turned at an expense counting as nothing compared with the vast expenditure inevitable in any other plan that could be suggested,

Before closing this report I would state that I am indebted to the valuable assistance of Mr. F. S. Burrowes and Mr. H. C. Wilson in making the accompanying maps, profiles, &c.

Very respectfully, your obedient servant,

H. ST. L. COPPÉE,
Assistant Engineer.

Maj. W. H. H. BENYAURD,
United States Engineers.

EXAMINATION OF CACHE RIVER, ARKANSAS.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 16, 1880.

GENERAL: I have the honor to present the following report of the results of an examination of Cache River, Arkansas, in accordance with act of Congress approved June 14, 1880.

The field party was in charge of Mr. Zeph Harrison, assistant engineer, whose report is transmitted herewith.

An examination of this same stream was made in 1871, under the direction of Lieutenant-Colonel Raynolds, the report upon which will be found in the report of the Chief of Engineers for that year, page 354.

No appropriation, however, was made at that time for work considered necessary to be done in order to open up the stream to navigation.

The length of the stream examined by Mr. Harrison was 250 miles, extending from Martin's to its junction with the White. The upper portion as far down as Gray's Ferry showed no well-defined channel; in fact it was more like a swamp filled with fallen trees, stumps, &c., and through which it was very difficult to pass even with a skiff.

From Gray's Ferry to the mouth, a distance of 160 miles, a well-defined channel was found, varying in width from 200 to 700 feet, and with sufficient depth for navigation for at least 6 months in the year if the river were cleared of obstructions.

The natural obstructions to navigation are snags, logs, leaning timber, &c., and the cost of removing same, in order to make a navigable channel in the river from the mouth to Gray's Ferry, is estimated by Mr. Harrison at $30,316.

This estimate includes the work of excavating across some 16 bends, to a depth of 5 feet and width of 30, with the idea that the current will possibly excavate a channel sufficiently large for the passage of boats when there is sufficient water in the river for them to run. While frequently on nearly all the small rivers passages are cut through timber, from one bend to another, and used as high water chutes for boats, the excavating is a much more serious matter, and a device of doubtful utility. It would be better to adhere to the natural channel if possible, and clear the same of obstructions.

On the Cache, Mr. Harrison reports that there are 28 of these short bends, where it is even impossible for the smallest boat to turn without frequent stoppages.

The Memphis and Little Rock Railroad crosses the Cache at a point 45 miles above its mouth. The bridge here has no draw, and as now built it is a serious obstacle to communication between the upper and lower sections of the river. Small boats run above the bridge, bringing all the freight to that point, from whence it is shipped east and west. The railroad, therefore, may be said to be the only outlet now for the commerce of the Upper Cache country. If it be desired to render navigation continuous, so as boats can navigate the whole length of the river without hinderance, some means must be taken to cause the railroad company to put a draw in their bridge sufficiently wide for the passage of the class of boats that would navigate the stream were it improved.

The commerce of the Cache country was in former times quite extensive. The shipments of cotton amounted to 40,000 bales annually, but

a variety of causes have led to its decline, so that now it amounts to only about one-third of the above amount.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. ZEPH HARRISON, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 16, 1880.

MAJOR: I have the honor to present herewith my report on the recent examination of Cache River, Arkansas.

The headwaters of this river are in Green County, in the northeastern corner of the State, from whence it flows in a southwesterly course, dividing this county from that of Randolph and Lawrence, and crossing the counties of Craighead, Jackson, and Woodruff, and empties into White River 1 mile above Clarendon. The length of the river is 600 miles, 250 of which were included in my examination.

Following your instructions of date November 23, 1880, I left Memphis the same day, and arrived at Newport, Jackson County, on the next.

Here I procured 2 men, a small skiff, and the necessary camp outfit.

I transported our effects by wagon to Cache River, 12 miles distant, at a point called "Martin's," and made this the initial point of my reconnaissance, as the river above is incapable of improvement without great expense, and no commerce to warrant it.

We then descended the stream, taking its sinuosities, soundings, number of snags, &c. The stage of water was about 6 feet above extreme low-water and on the rise. The banks were very low, being often concealed by the high water, and nearly the whole country was flooded. The rain was heavy and incessant.

This part of the river was very tortuous, the bends being short and very numerous, and no stretches of water could be seen longer than 100 yards. It is very similar to a swamp, and the prevailing timber being cypress, the high stumps project out of the water and hold the drift; consequently, this is a long and almost continuous jam for nearly 50 miles, broken, however, by broad and expansive lakes, which have an uniform depth of 5 feet at low water.

We made very slow progress over this stretch, as we could not unload the boat, but were compelled to clear a channel through the high water. Below this stretch, and down to Gray's bridge, we found these lakes to be quite numerous, but the river has no continuous channel, swift currents running as before, through the cypress timber, being the only connection.

Below this bridge, however, down to the mouth of the river, there is a continuous channel, with sufficient water for navigation 6 months in the year, if the river be cleared of its obstructions.

This part of the river varies in width, being from 250 to 700 feet wide, generally 350, and has an average depth of 12 feet at low water. The bottom is sand or gravel. The banks are high, steep, non-caving, and composed of soil overlaying clay. The farms are more numerous on this part of the river.

CHARACTER OF ADJACENT COUNTRY.

The valley of the Cache is one of unsurpassed fertility. Some of the finest cotton-belts in the State are on this river. Luxuriant cane, the index of good cotton land, here grows in profusion. Corn, wheat, and the other cereals are grown sufficient for home consumption. For the sake of description the lands may be divided into three classes, viz, the first and second bottom lands, and the high lands.

The first bottom lands, together with the swamps and marshes, are covered with a very superior growth of timber. Cypress is found in abundance and generally large. Pupelo gum is the prevailing wood, however; it has a shape peculiar to itself, having a diameter at low water mark of 10 feet very often; and of, at most, 2 feet at high water; above this it assumes the ordinary dimensions of the black gum. It is the lightest as well as the finest timber in this section of country.

Oak is also found here, but the finer varieties, embracing the post, overcup, red, and white, are found in the second bottoms, the last mentioned in unlimited quantities. There are also in the second bottom lands gum, elm, maple, sassafras, birch,

beech, willow, pawpaw, pecan, iron-wood, and other growth indigenous to that climate.

This class of land is about the elevation of high water, and is not subject to many overflows, but as yet is all timbered.

The cultivated class, or the high lands, lay very high, being from 30 to 50 feet above low water. There is a ridge of land in this class, on the east side of the river, called Jones' Hill, extending from De View down to York's Landing, 26 miles long, and a mile or more wide, which is almost one vast cotton-field, and raises over a bale to the acre in good seasons. This cotton is said to rank among the highest grades.

TRIBUTARIES.

Bayous Cache, Calatchie, and De View are the only tribntaries of the lower river; each is 120 feet wide at the mouth, and distant 120, 65, and 35 miles respectively from the mouth of the river.

Bayou Cache is an outlet from White River into Cache River, although in times of high water on the latter stream the current is the other way.

The banks on these bayous are similar to those on the main stream, but the timber is not so thick, dense cane-brakes lining the banks on either side. The water is deep and the current sluggish. Three large steam gins are located on the Bayou Cache, but on account of the drift in the bayou the cotton is hauled to Des Arc, on the White River. Several large lakes and swamps have their drainage into the river. Considerable timber is taken from these every season.

OBSTRUCTIONS TO NAVIGATION—IMPROVEMENTS AND ESTIMATES.

The obstructions to navigation in Cache River consist of snags, imbedded logs, drift piles, sand-bars and leaning trees. From Gray's Bridge to the mouth of the river, a distance of 160 miles, by pilot's estimate, I counted 2,655 snags, 76 drift piles, and 3,800 leaning trees about to fall in the stream, but on account of high water the number of snags will have to be considerably increased.

Having been informed of certain localities where the shoalest water could be found, I took some pains in thoroughly sounding them. Two of these are sand-bars about 30 and 35 miles respectively from the mouth of the river These bars reach across the river, widening the channel and reducing its depth to less than 1 foot of water in the dry season.

For these places I would suggest the building of ordinary wing-dams, sufficient to scour out a channel, say, 30 inches deep at low stages.

I estimate the cost of these at $3,000.

The rest of the points referred to are masses of sunken logs, imbedded in sand and gravel.

The removal of these is all that is necessary.

I also counted 28 short bends, where it is impossible for .the smallest boats to turn without stopping.

There are 16 of these in which the point is so narrow that cut-offs can be made advantageously and with little expense. The timber can be cleared to a width of 50 feet, and the earth excavated to a depth of 5 feet and width of 30 feet. I have estimated this excavation to be 16,000 cubic yards.

There is a great deal of dangerous timber along the banks, which might be cleared and chopped into 20 feet lengths to a width of 20 feet on either side, and the trees girdled as much farther back from the river.

The length of this clearing is about 120 miles, and will take about 8 months' work for 30 men. This would cost about $110 per mile.

The Memphis and Little Rock Railroad has a bridge across the river 40 miles from its mouth, which consists of 18-foot spans on piling driven into the river-bed. This is the most serious obstacle to navigation, and should be changed to accommodate a draw.

For pulling snags, removing drift and raising sunken logs, a small steamer could be chartered, and fitted with the necessary crane, shears, &c. The shortness of the working season during low water would scarcely warrant the building of a new boat. The monthly expenditure of running this boat would be—

Charter of boat with ordinary crew, say	$650
Supervising engineer	150
Mate	75
Cook and helper	60
10 extra men, at $40	400
Subsistence for 17 men, at 50c. per day	255
Fuel for boat	50
Total	$1,640

ESTIMATE OF COST OF PROPOSED IMPROVEMENT OF CACHE RIVER, FROM GRAY'S BRIDGE TO ITS MOUTH, 160 MILES.

Removing snags, drift, and sunken logs, 3 months' work; add 1 month for moving, 4 months, at $1,640	$6,560
2 wing-dams, at $1,500	3,000
Excavation, 16,000 cubic yards, at 30 cents	4,800
Clearing the banks 40 feet wide, and girdling the same width, $110 per mile, 120 miles	13,200
Contingencies, 10 per cent	2,756
Total	30,316

By the expenditure of this sum the safe navigation of the river can be secured for at least 6 months in the year.

COMMERCIAL STATISTICS.

The amount of commerce carried on in past years on Cache River was quite extensive, engaging constantly during the season 1 large and 2 small steamers. At Mayberry's Landing was located for many years a warehouse for cotton, 40 feet wide and 160 feet long, which has since been burned. But a variety of causes have of late years been brought to bear on its commerce, until now it has sunk to one-third of its past proportions.

The steamer Trader runs from Gray's Bridge to the railroad bridge. This bridge broke the connection between the upper and lower river, and left the people at the mercy of a non-competitive road. To show the railroad discrimination against this section of country, the tariff of a bale of cotton from Little Rock to Memphis, 135 miles, is $1, while from Surrounded Hill, on Cache River, to Memphis, 83 miles, it is $1.50.

The river has been filling up with so much drift of late that it takes four times as long now to make a trip as it did formerly. Private individuals have done considerable work on the river, pulling the worst snags and cutting the more dangerous timber, but they have since become discouraged, and many prefer the long haul over the swamps to Des Arc to the uncertainties of the river.

The roads over these swamps are nearly impassable in the wet season, and it is often late in the spring following before they get their crops marketed at all. Notwithstanding all these difficulties, about 15,000 bales of cotton, 5,000 tons of seed, 12,000,000 feet of lumber, and some grain, furs, cattle, and poultry were taken by river from the valley of the Cache during the past season. It is computed that the trade diverted from the river of late years amounts to 40,000 bales of cotton. No trade is carried on below the railroad excepting rafting.

The following is a list of the principal steamboat landings and bales of cotton shipped from each:

Landings.	Distance from mouth.		Bales of cotton.	Tons of seed.	On which bank.	Remarks.
	By water.	On air-line.				
Memphis and Little Rock R. R.	45	15	.....	.....	Right	Warehouse 100 by 50 feet.
Surrounded Hill	50	17	1,000	350	...do ..	
Sandy Bank	55	20	100	40	...do ..	
York's	87	31	500	200	Left ..	
Hammond's	95	34	3,000	1,000	...do ..	
Mayberry's	110	38	3,000	1,000	...do ..	Warehouse 50 by 50 feet.
Bayou Cache	119	40	1,000	300	Right.	
Gage's Point	125	43	3,000	1,000	Left ..	Warehouse 40 by 50 feet.
De View	140	50	1,200	400	...do ..	
Augusta	160	58	800	250	Right.	Gray's Bridge.

Very respectfully submitted.

ZEPH. HARRISON,
Assistant Engineer.

Maj. W. H. H. BENYAURD,
Corps of Engineers, U. S. A.

EXAMINATION OF BŒUF RIVER [BAYOU BŒUF], LOUISIANA.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 1, 1880.

GENERAL: I have the honor to submit the following report upon the examination of Bayou Bœuf, Louisiana, in accordance with act of Congress approved June 14, 1880.

The examination was made by Mr. H. St. L. Coppée, assistant engineer, whose report will be found annexed, and was made with a view of determining the character and extent of the obstructions to navigation, with estimated cost of removing same, and the nature and extent of the commerce to be benefited.

The stream was examined from the State line between Arkansas and Louisiana to its junction with the Ouachita, a distance of 346 miles. The upper reach of the river for a distance of 66 miles, that is, from the State line to Wallace's Landing, is made up of numerous small lakes, connected by short stretches of river, which in many places are not over 20 feet in width. This part of the river may be compared more to a swamp, and is so obstructed by snags, logs, stumps, &c., and the commercial advantages to be gained by improving the same, even for high water navigation, are so small in comparison to the amount required for the work, that it is not deemed advisable to consider this part of the river as desirable to be improved. The land in this section is susceptible of a high degree of cultivation, but the constant liability of destruction of the crops, due to breaks in the Mississippi levees in the State of Arkansas, causes the lands to be abandoned.

From Wallace's Landing to the mouth, a distance of about 280 miles, the river is obstructed by snags, logs, and overhanging timber. For the present it is only deemed advisable to improve the navigation by removing these obstructions, which will allow boats to ascend to Wallace's Landing during that portion of the season when the water in the bayou is only sufficient for boats of the lightest draught.

The amount of cotton shipped annually from the bayou is estimated at 17,000 bales, valued at $850,000, to which must be added return freight, &c., to almost an equal amount. From the upper portion of the stream, the products find a market in New Orleans via the Vicksburg and Shreveport Railroad to Delta, and thence down the river by boat. The charge per bale to New Orleans by this route is $2.50; by boats directly down the bayou, when the stage of water admits, $1.50. Were the stream improved by the removal of the obstructions above noticed, the crop of cotton and other products would be greatly increased.

The estimated cost of the work is $20,020.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. H. ST. L. COPPÉE, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., November 2, 1880.

MAJOR: In accordance with your instructions, received at Grand Gulf October 8, I removed my party to Vicksburg, where I obtained tents, blankets, &c., for the three examinations—bayous Tensas and Maçon, and the Bœuf River. The Tensas I directed

Mr. H. C. Wilson to examine, Mr. F. S. Burrowes the Maçon, and I, myself, took the Bœuf River, the report of which I have the honor to submit as follows:

The Bœuf River, which I examined from the State line dividing Louisiana and Arkansas to the mouth, I shall, for convenience of description, divide into two parts: That portion from the line to Wallace's, or the first reach, being closed by logs, rafts, drift, &c., and very difficult to improve for navigation; and a second reach from Wallace's to the mouth, which differs in every respect, having been navigated for some years past at a stage of about 7 feet above low water.

From what I could gather, I judge the river to be at the time of this examination about 3 feet above low water mark, *i. e.*, the lowest water known, and falling.

FIRST REACH.

The Bœuf River at the State line is about 20 miles in a direct line from and west of the Mississippi River. The stream 3 miles above the line is in the form of a lake, quite wide and deep enough to float the largest river boats, but at a point half a mile below, called the Shingle House Crossing, it scatters into numerous branches narrow and shallow enough to ford at low-water, and exists in that condition until the Ashton Road Crossing is reached, 4 miles below the State line; thence the stream begins to collect its branches, and where they finally come together there is a raft of logs, drift, &c., probably 1,000 yards through.

From the Ashton Road Crossing the river again takes the form of a lake, averaging 150 feet wide by 13 feet deep by 4 miles long. This lake contains about 30 snags, 15 logs partially and in places entirely across the stream. Should improvements be attempted, 10 everhanging trees would also have to be cut down. The lake is comparatively straight, *i. e.*, the bends are not sharp or narrow. From the foot of the lake for a distance of 8 miles the stream is very crooked and difficult, at the present stage of water, to navigate even with a skiff. In many places cypress trees stand directly in the channel. The width varies from 20 to 100 feet, and the depth from 9 to 3 feet. Forty logs or fallen trees cross the stream at different intervals, causing rafts and heavy drift piles to form, making it impassable. In this stretch I counted 60 snags, and 9 large cypress stumps. The shoals (3 feet of water at the present stage) are also very numerous; these shoals are caused by sand-bars forming below the narrow bends. In case of improvement a great number of overhanging trees would have to be cut. From this point, which is 16 miles from the State line, to Wallace's, 50 miles further by river, the stream is a continuation of lakes and narrow bends following each other successively. The lakes, which vary from $\frac{1}{4}$ to 2 miles in length, have an average depth of 5 feet, width of 100 feet, and but little current.

At the end of each lake there is generally a mile or more of sharp horseshoe bends, in places the river being not over 20 feet wide by 2 feet deep, containing sand-bars, rafts, drift piles, trees, and stumps standing in channel, and every few hundred feet a cypress log stretching from bank to bank. Between the lakes or straight open stretches the current is considerably accelerated.

The river in the upper portion of this first reach runs through a swamp, about 4 miles wide, lying between the Maçon hills and the high lands east of bayou Bartholomew, whereas through the lower portion the country is higher, the banks being usually about 17 feet high.

The soil is of a sandy composition, the bank in some places showing thin strata of clay, the surface of the adjacent country being of the same nature; the river bed is generally a hard compact sand.

The timber throughout the reach varies; that at the upper end being superior in quality and quantity; 1 mile west of the river, at the State line, there is a strip of good pine 2 miles wide by about 15 miles, long, running southeast.

The entire reach contains cypress, many varieties of oak, such as white, cow, black, red, overcup, pin, &c.; hickory, gum, elm, and ash are also found. The timber which principally fringes the river is cypress and oak.

COMMERCIAL STATISTICS.

The land adjacent to the Bœuf, for some distance both above and below the State line, is capable of high cultivation, but owing to the sickliness of the climate and the liability to overflow it is but little worked. The plantations or clearings east of the Shingle House, on the Maçon hills, are many of them deserted. The planters at present average about 15 bales of cotton apiece. Should this upper portion of the river be opened to navigation the acreage of cultivated land would be greatly increased. The products of the country west of and in the vicinity of this reach of the Bœuf pretty much all find an outlet by way of the Bartholomew, and probably would do so were the stream made navigable; the products on both sides, from the Shingle House as far south as Wallace's, would amount to about 300 bales of cotton per annum, and even some of this might be shipped by the Maçon in preference. Most of the produce

would come from Oak Grove, on the Maçon hills, and Shilling's neighborhood near the river; the cattle trade would be but light, owing to the great loss incurred at overflow time.

In my estimation the great outlay necessary to make this 66 miles of river navigable, even at high water, would hardly be compensated for by the little cotton (300 bales), seed, cattle, &c., that the country would produce.

The unhealthy and present backward condition of this section, in a great degree, is due to overflows; these, from some time before 1842 until after 1864, did not occur, because of the good condition of the levees bordering the Mississippi River, but during the late rebellion these were destroyed in many places, so that since, at every overflow of the Mississippi River, all this country lying between the Ouachita and the Mississippi is inundated, excepting the high ridges, probably 16 feet above high water mark, such as Maçon hills, &c. The principal breaks necessary to rebuild in order to protect this Bœuf country are in the Matthew's Bend levee, which I am told an 8-foot levee would protect, and the Possum Fork. The Ashton break would affect the Maçon and Tensas, but not the Bœuf, owing to the intervening hills.

The oscillation of the Bœuf is about 30 feet, the time of rising and falling corresponding very nearly with the Mississippi River; the planters look for high water in December and low water in the summer and fall.

SECOND REACH.

This reach extends from Wallace's to the mouth of the river. The following table shows the distance in miles from point to point on the stream, the depths, widths, height of banks when not in swamp, the number of snags, leaning trees, and logs necessary to remove should improvement be contemplated. These are all estimated for a stage of water 5 feet above the present.

Table.

From Wallace's to—	Miles.	Width (feet).	Depth (feet).	Heighth of bank (feet).	Snags.	Leaning trees.	Logs.
Whitaker's	15	250	8 to 20	20	20	20	10
La Fourche	4	200	10 to 20	15	11	11	10
Lone Plumb	4	160	3 to 10	15	19	30	30
Head of Bends	2	125	2 to 11	15	7	26	22
Bristor's	5	120	10	15	14	39	43
Jerden's	10	120	11	15	30	50	50
Edward's	7	110	11	15	18	33	26
Cheek Place	17	100	2 to 11	8 to 15	61	143	50
Girard Bridge	4	100	4	13	19	31	24
Alto	40	100	2 to 10	13 to 22	109	287	40
Copeland's	40	100	2 to 11	.....	106	217	40
Hebert's	40	50 to 200	2 to 11	.....	193	215	40
Three Rivers	42	70 to 200	2 to 11	.....	100	151	15
Mouth	50	100 to 200	2 to 11	.....	110	47	10
Total	280	.....	.....	.....	817	1,300	410

The river throughout this entire reach repeats itself in general features, lakes open, deep, and comparatively straight, followed by crooked, narrow bends, innumerable bars or shoals, with a depth of water varying from 2 to 3 feet. The banks, to within 150 miles of the mouth, are, generally speaking, abrupt and high, varying from 13 to 20 feet. Below in places they take the form of a natural terrace, or run back from the water surface on a gentle slope, again followed by ridges abrupt and often 30 feet high.

The soil also varies from sand to a mixture of sand and soft alluvial deposit. Fifty miles from the mouth, thick inclined strata of blue clay can be seen in the banks, which here become very high, more like bluffs, which immediately at the mouth are in part composed of loose rock. The bed of the stream is clay, gravel, hard sand, and at the mouth rock. The timber near Wallace's is mostly oak and cypress, the latter being used for all building purposes. This timber is found nearly as far down as Hebert's; there the cypress disappears, a great quantity having been cut and rafted down to the Ouachita in former years. The good oak also runs out, nothing remaining but a poor quality of oak, some gum, and willows. From Copeland's down there are numerous

towheads, or willow bars, forming in the middle of the river. These are very often found where tributaries enter the main stream.

The principal tributary, the La Fourche, which has but a narrow mouth, but further west takes more the form of a lake, enters the Bœuf 19 miles below Wallace's; it runs through a swamp between the Bœuf and Ouachita, leaving it again and returning to the Bœuf at Three Rivers, 230 miles below Wallace's. This stream, near Point Jefferson, flows into the Bœuf at low-water, but during the high stages the reverse is the case. There are numerous other creeks and bayous entering the Bœuf on its course to the mouth, none of which would be of importance to navigation. The principal ones are Davis Bayou, which is called Redmouth Bayou, at Redmouth, where it leaves the Bœuf, again coming in under the name of Davis Bayou 194 miles below Wallace's; Muddy Bayou, 198 miles below Wallace's; Big Creek, 203 miles below Wallace's; Marengo Creek, 230 miles below Wallace's; Turkey Creek, 3 miles above the mouth; Deer Creek, ½ mile above the mouth; and 13 other small creeks or bayous.

PRINCIPAL TOWNS AND COMMERCIAL STATISTICS.

The Bonnidy Creek country, which is adjacent to the river and west of Wallace's, and which at present ships all its produce to Point Jefferson, would, in connection with the country on the east and near Wallace's, bring to a landing at that point about 2,000 bales of cotton, some cotton seed, and cattle. Point Jefferson would bring in about 2,000 bales of cotton, also some cotton seed, and cattle, hogs, &c.

Girard, a town on the Shreveport and Texas Railway, situated ½ mile west of the Bœuf in Richland Parish, has a population of 75, 6 stores, 2 saloons, a post-office, &c. Prairie Marouge and Bastrop ship in part to Girard and thence by rail to New Orleans; also a large tract of rich country south of Girard sends her its produce. This produce in all amounts to about 5,000 bales of cotton, some cotton seed, cattle, hogs, &c.

Alto, 40 miles below Girard, a town containing about 100 inhabitants, 4 stores, 2 saloons, a post-office, &c., supplies a ridge or tract of very productive country situated above the highest water mark, which at present sends most of its produce to Rayville, thence by rail to New Orleans. Alto, and landings near Redmouth, Charlieville, &c., would gather about 3,000 bales of cotton, some cotton seed, cattle, hogs, &c.

The freight on cotton per bale to New Orleans via the Shreveport and Texas Railway from Girard and Rayville is at present $2.50. By steamer, from points between Point Jefferson and the mouth, it is only $1.50. From Charlieville the country, which is well settled and capable of high cultivation on both sides of the river as far as Hebert's and as far as the mouth on the east, would bring to the several landings an aggregate amount of about 5,000 bales of cotton. As a total in this reach I estimate that about 17,000 bales of cotton, some cotton seed, and a small quantity of cattle, hogs, &c., would at once be shipped by river to New Orleans were navigation improved, and in the near future these figures would greatly increase.

The effect of overflow is similar in this lower reach to that above, with the exception that at times the Ouachita River backs its water up the Bœuf probably 50 miles. In 1874, owing to a break having occurred in Morrison's levee on the Ouachita, the current of the Bœuf was checked, nearly 200 miles above its mouth, and the lands in the vicinity of Hebert's and above were inundated.

Before coming to the estimate for improvement, I would state that, in my opinion, anything like improvement of the Bœuf River for low water navigation is out of the question. The shoals, bars, towheads, bends, low water snags, &c., are far too numerous to be removed without a great expense in the way of dredging, dam and lock building, &c.

The steamer Erie No. 10, commanded by Captain Hamilton, has been running in the Bœuf for the last two years during high water as far as Point Jefferson, but with difficulty and danger, because of the snags and overhanging trees. These I would suggest removing.

The following estimate of the cost of improvement is for a stage 5 feet above the present water surface, which would make navigation good about 5 months in the year.

ESTIMATE.

Expense for one month:

Engineer in charge	$150
Mate	100
Cook and helper	60
20 men at $40 per month	800
Subsistence, 24 men at 50 cents per day	360
Total	1,470

To improve the river from Wallace's to the mouth, 280 miles:

Flatboat, with necessary tools	$3,500
Removing snags, &c., 10 months' work (2 seasons)	14,700
Contingencies, 10 per cent	1,820
Total	20,020

This work would have to be accomplished during low water. The boat used should not draw more than 15 inches.

Very respectfully, your obedient servant,

H. ST. L. COPPÉE,
Assistant Engineer.

Major W. H. H. BENYAURD,
U. S. Engineers.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 39.

YERBA BUENA ISLAND.

LETTER

FROM

THE SECRETARY OF WAR,

IN RELATION TO

The bill to quiet the title to Yerba Buena Island.

DECEMBER 20, 1880.—Referred to the Committee on the Judiciary.
JANUARY 6, 1881.—Recommitted to the Committee on the Judiciary, and ordered to be printed.

WAR DEPARTMENT,
Washington City, December 18, 1880.

The Secretary of War has the honor to transmit to the House of Representatives, for the Committee on the Judiciary, in response to a communication from the Hon. H. A. Herbert, of that committee, dated June 15, 1880, inclosing a copy of bill H. R. 1419, Forty-sixth Congress, first session, being a bill "To quiet the title to the island Yerba Buena," and requesting infomation in regard thereto, a report upon the subject, with appendices, the same having been prepared in the office of the Chief of Engineers, and submitted to this department by the accompanying letter from that officer, dated December 16 instant.

In view of the importance of this subject, it is recommended that the accompanying report and appendices be ordered to be printed.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., December 16, 1880.

SIR: In compliance with your indorsement upon a letter addressed to the honorable the Secretary of War by the Hon. H. A. Herbert, from the Committee on the Judiciary of the House of Representatives, on the 15th of June last, desiring information respecting House bill No. 1419, Forty-sixth Congress, first session, entitled "A bill to quiet title

to the island Yerba Buena," I have the honor to send the report which is herewith.

The Hon. Mr. Herbert's letter and its accompanying papers are herewith returned.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Genl.

Hon. ALEX. RAMSEY,
Secretary of War.

REPORT CONCERNING YERBA BUENA ISLAND, SAN FRANCISCO HARBOR, CALIFORNIA.

[Prepared in the office of the Chief of Engineers, United States Army, to accompany a letter to the Secretary of War, dated December 16, 1880, returning bill 1419, House of Representatives, Forty-sixth Congress, first session.]

IN THE HOUSE OF REPRESENTATIVES.

MAY 5, 1879.—Read twice, referred to the Committee on the Judiciary, and ordered to be printed.

Mr. WAIT, on leave, introduced the following bill:

A BILL to quiet the title to the island Yerba Buena.

Whereas the United States, by act of Congress, chapter one hundred and ninety-four, entitled "An act to expedite the settlement of titles to lands in the State of California," approved July first, eighteen hundred and sixty-four, section five, "relinquished and granted to the city of San Francisco and its successors" all the right and title of the United States to lands within the corporate limits of the city of San Francisco; and

Whereas the President, notwithstanding said grant, did, on the twelfth day of October, eighteen hundred and sixty-six, seek to reserve for public use the island Yerba Buena, a portion of the land granted to the said city of San Francisco by said act of July first, eighteen hundred and sixty-four; and

Whereas, in pursuance of said attempted reservation by the President, in the month of February, eighteen hundred and sixty-seven, the United States, by a detachment of her troops, forcibly took possession of the island Yerba Buena, ejected therefrom the rightful owners thereof, and have since held possession of the same; and

Whereas it is the purpose of the government, in good faith, to give full effect to said grant of July first, eighteen hundred and sixty-four: Now, therefore, in order to forever settle the title to the said island Yerba Buena,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all the right and title of the United States in and to the island, in the city and county of San Francisco, in the State of California, known as the island of Yerba Buena, or Goat Island, be, and the same is hereby, relinquished and granted to the said city of San Francisco and to its successors, for the uses and purposes specified in the ordinances of said city, ratified by an act of the legislature of said State of California, entitled "An act concerning the city of San Francisco, and to ratify and confirm certain ordinances of the common council of said city," approved on the eleventh of March, anno Domini eighteen hundred and fifty-eight.

The island of Yerba Buena is in the bay of San Francisco, about one mile and a half from the city of San Francisco. It lies easterly of, and nearly opposite, the middle of the channel leading into the inner harbor between the north front of the city and the island of Alcatraz, and is in an excellent position for commanding by its fire, from the batteries which it is designed to erect upon it, the entire inner bay in the vicinity of the city and the channel just mentioned. The area of the island is about 140 acres, and its position in the harbor is shown in the plat herewith.

It is one of the points in San Francisco Harbor which was designed

by the Spanish and Mexican Governments for defensive purposes. (See Appendix A.)

The joint board of high Army and Navy officers, which was appointed by President Polk in 1848, to visit the Pacific coast, and select from the public lands of the United States, which had been recently acquired by conquest from Mexico, sites for fortifications and other public uses of the United States, on the 31st of March, 1850, addressed a letter to the Secretaries of the War and Navy Departments recommending the reservation of Yerba Buena Island. (See Appendix B.)

In consequence of this recommendation and the subsequent recommendations of the Chief Engineer of the Army and the Secretary of War, the President, on the 6th of November, 1850, reserved the island for public purposes. (See Appendix C.)

The President had authority of law to make such reservations. (See Appendix D.)

The order of the President was communicated by the Commissioner of the General Land Office to the surveyor-general of California on the 24th of June, 1851 (see Appendix E), and this official excision of Yerba Buena Island from the public lands of the United States open to purchase and settlement, was thus placed on file in the office of the surveyor-general of California, an office established by the general government for the record of all matters respecting the public lands in that State, and which any person interested in any manner in, or desiring to perfect his title to, any of the public lands of that State must necessarily have visited.

In 1854 Major (now General) Tower, the engineer officer in San Francisco Harbor, "occupied" the island of Yerba Buena as public land of the United States for the "public use" of the United States, viz, the quarrying of stone for the batteries at Alcatraz Island, and employed one Thomas Dowling, a squatter on the island, to quarry the stone. This Dowling has been for many years and is, by his successors, a persistent claimant for the island. General Tower, in a letter to this office under date of January 7, 1869, said in reference to this use of the island:

> I purchased the blue stone wherever it could be found; getting some from Mr. Dowling, then living on Yerba Buena Island, some from parties working a quarry on Angel Island, and some from the State prison quarries. Angel Island and Yerba Buena were government reservations, yet both were claimed by other parties. * * * In paying Mr. Dowling for quarrying stone I neither acknowledged nor supposed that he had any right to the island.

And under date of November 15, 1880, General Tower, in another letter, states.

> I saw Dowling frequently * * * He understood very well that he had no claim, whatever the decision of the land commission might be, to the island, and that it was reserved by the President.

[The decision of the land commission referred to by General Tower was in favor of another claimant, one Polack, under a pretended Spanish or Mexican grant, but it was afterwards reversed by the United States court and the claim was thrown out as fraudulent.]

In 1863 General George Wright, then commanding the Department of California, "occupied" the island for another "public use" of the United States; that is to say, he caused an officer of engineers to make surveys of the island for batteries to be erected in the then supposed imminence of foreign war. The surveys were made and no doubt yet exist in the archives of the Military Department of California, ready for any emergency that may arise, but the batteries were not then built, it being decided on second consideration that it was more important to

occupy some points (Point San Jose and Angel Island) in an outer line of defense which was not then complete. (See Appendix F.)

On the 1st of July, 1864, there was enacted by Congress an act entitled "An act to expedite the settlement of titles to lands in the State of California." (See Appendix G.) This is the act referred to in the first section of the bill now under consideration.

It is the understanding of this office that up to the 1st of July, 1864, the actual title to all the lands occupied by the city of San Francisco was in the United States and not in the inhabitants of that city, and that the object of the United States law of that date was to convey to the city the United States title to the land occupied by it for the "uses and purposes" specified in a certain act of the legislature of California (approved March 11, 1858, see Appendix H), which "uses and purposes" were defined to be, the conveyance of said lands by said city "to the parties in the actual possession thereof by themselves or tenants on or before the 1st day of January, A. D. 1855." The framer of the United States law of July 1, 1864, apparently forgot, however, that while the actual city of San Francisco was, as it is now, confined to the mainland, the city boundaries by the State law of April 15, 1851, are conterminous with the boundaries of the county of San Francisco, and include the United States islands in the harbor, in the same way that the city of New York includes certain fortified islands belonging to the United States in the harbor of New York. He apparently forgot, also, that the "uses and purposes" specified in the State law of March 11, 1858, are confined to the mainland, "any piece or parcel of land situated south, east, or north of the water-lot front of the city"; that is to say, the United States islands in the harbor being excluded from its operation.

The United States act of July 1, 1864, was, therefore, not operative as to the United States islands in the harbor, even if they had not been "occupied" by the United States for public purposes, or should not thereafter be "designated" by the President of the United States before the rendition of a specified "approved plat" as an exception to the operation of the act, which exception was provided for in the act. Moreover "the approved plat of the exterior limits of San Francisco," mentioned in the United States act of July 1, 1864, had not been rendered (see Appendix I) when, on the 2d of October, 1866, the acting Chief of Engineers of the Army, out of abundant caution, requested of the Secretary of War that the island of Yerba Buena be made an exception to the operation of the United States law of July 1, 1864, as provided in that law. President Johnson, therefore, on the 12th of October, 1866, made the necessary order for this exception, and on the 17th of the same month the Commissioner of the General Land Office communicated the same to the surveyor-general of California, for the records of his office. (See Appendix K.)

The title, then, to the island of Yerba Buena was, and is now, clearly in the United States; for, under a fundamental law of Mexico all islands on the coast were reserved for the public purposes of Mexico, and grants to these islands were prohibited (see Appendices D, L, and M), so that no title to the island had passed to any one *prior to the conquest of California by the United States*, and, in fact, there was (as far as this office is informed) no claim set up to Yerba Buena before the United States Land Commission, which was established by act of Congress March 3, 1851, and which sat for nearly five years in San Francisco for the settlement of private land claims in California, except the claim of one Polack, under a pretended Mexican grant, which claim, although confirmed by the commission, was afterwards thrown out by the United States circuit

court as fraudulent, and the claim of one Limantour, which was rejected by the commission (see Appendices D, N, and O); and to this day there has no claim or title to the Yerba Buena anterior to the conquest been presented at the office of the surveyor-general of California except the title of the United States. (See Appendix N.) There could have been no private title to the island established *between the conquest and the President's reservation of November* 6, 1850, for the land laws of the United States, opening the United States lands in California to pre-emption (excepting "lands reserved by competent authority"), were not enacted until March 3, 1853; and finally, although the island had been "occupied" for public uses as required in the United States law of July 1, 1864, and the plat required by that law had not been rendered (it has never been rendered to this day), "to make assurance double sure" in respect to so important a place of defense for the city of San Francisco, the President again excepted and reserved the island on the 12th of October, 1866, as has just been stated. Furthermore, Judge Field, in his United States circuit court decree of May 18, 1865, incidentally decided that *prior dedication or reservation* of land by the United States was sufficient to prevent the United States law of July 1, 1864, from operating to transfer land to the city of San Francisco under that law which he was then interpreting.

It is important here to notice that Judge Field in interpreting the United States law of July 1, 1864, *incidentally decided also that it did not affect the islands in the harbor of San Francisco, the land confirmed to the city of San Francisco, by the decree made under that law, being* ONLY *four square leagues on the mainland.* (See Appendix P.) This decree of Judge Field was confirmed by act of Congress of March 8, 1866. (See Appendix Q.) *It is important also here to notice that this United States law of March* 8, 1866, *is specially confined in its action to the mainland, and that none of the islands in the harbor could in any wise have been affected by it, for that law gave to the city of San Francisco only the lands confirmed to it by Judge Field's decree of May* 18, 1865, *and that decree confirmed to the city* ONLY *an area of four square leagues on the mainland*, excepting, however, lands within that area theretofore "reserved or dedicated to public uses by the United States," and certain other parcels of land.

As before stated, one Dowling, who was a squatter on Yerba Buena Island, was for many years a claimant for the title of the island, and his claim, according to the briefs now in this office, is represented by Messrs. Brooks, Judson and Center, by their attorney in fact, David S. Turner, and by William M. Evarts, S. M. Johnson, and others as counsel. It is claimed that Dowling purchased for $500, in 1864, from a Captain Nye, his (Nye's) title under an alleged permit or license to occupy the island from the secretary of a former Mexican governor, Figueroa, "the same being compensation for transporting the body of the deceased governor from Monterey to Santa Barbara"; also that Dowling owned the island under the pre-emption laws. Dowling, however, at one time testified that he *only* claimed by *pre-emption*. At another time he disclaimed raising any question as to the title of the United States, but said that he only sought compensation for his private property, and Nye testified that he (Nye) had never claimed the island and that Dowling was a trespasser.

In Dowling's statement of his claim to Congress, in 1869, he says:

> Your memorialist, on the faith of his right, proceeded to bestow his labor and expend his money in the erection of such lasting and valuable improvement as he considered would add to the permanent value of the island. It would be too tedious to enumerate in detail the various improvements which were put upon said island by both Nye

and your memorialist. They consisted of wharves, houses, fences, out-houses, and all uch improvements as were calculated to enhance the value of the property. He also eleemed at least two and a half acres of land at a cost of a vast amount of labor and money.

He also claimed that he put 50 acres under cultivation and expended $150,000 on the island. Against these claims we have the statement of the officer in command of the troops which occupied the island and established a military post there in 1867, that the value of the improvements at that time was comaratively nothing; that $15,000 would have covered the cost of the improvements when they were built, even at former extravagant California prices; that the only ground which gave any evidence of having been cultivated consisted of two patches of "an acre or two" each; that there was no fencing; that the buildings consisted of one small one-story (and he thinks one-room) house, two small workshops, and a shanty or two of no value; and that instead of two and a half acres having been reclaimed from the water and added to the island "some refuse of the quarry had been thrown in on the shore line" (probably to get rid of it, as is done in the case of all quarries on the shore), "but the area of land added thereby was insignificant." (See Appendices R and ZZ.) It has already been stated that grants of islands on the coast, anterior to the conquest, were under the laws of Mexico illegal, and that the pre-emption laws of the United States were not extended to California public lands until March 3, 1853 (or more than two years after the legal reservation of the island by President Fillmore, on the 6th of November, 1850); and that there was no application made at the United States land office in San Francisco by Dowling or any one else for pre-emption of the island. (See Appendix N.)

In the Senate of the United States, Senator Howard, chairman of the Committee on the Pacific Railroads, on the 7th of March, 1870, made a report for the committee adverse to the above claim of B. S. Brooks and others, successors to the claimant Dowling, and in this report he used the following language:

> The title of all the lands in California, as often held by the Supreme Court, is presumed to be in the United States under the treaty of cession with Mexico, and the government cannot be held to be divested of it but in pursuance of some act of Congress. The committee know of none such.
>
> On the 6th of November, 1850, President Fillmore by a formal order *reserved* the island for *public uses*. This was two years and a half before the passage of the act of Congress of March, 1853, by which the right of pre-emption was extended to the public lands lying in that State; by the sixth section of which it was expressly provided that the right of pre-emption should not extend to lands reserved "by competent authority." The authority here referred to must mean none other than that of the President of the United States, and so the Supreme Court held in Grisar *vs.* McDowell, 6th Wallace, 381.
>
> * * * * * * *
>
> We are not advised whether the island was, before or after the 1st of July, 1864, actually occupied for such uses, nor is the question of such actual occupation, in the opinion of the committee, a material one, for it could not have been the intention of Congress in the passage of the last-named act to release and vacate such a reservation. It cannot be assumed that because the government had not actually gone into possession under the reservation of 1850 it intended, by using the word "occupied," to subject this very important island to the claims of such settlers as might see fit to seize it, and we do not hesitate, therefore, to construe the word "occupied" as meaning reserved—as including a reservation with intention to occupy and use it for public purposes.
>
> This is the construction given to the language by the Department of the Interior, as well as the Department of War, for we find that on the 6th of October, 1866, the Secretary of War advised the President to reserve the island for military purposes, and that on the 12th of the same month President Johnson, by an executive order, directed it to be reserved. (See inclosure of letter of Commissioner of General Land Office of January 25, 1868, hereto attached.)

The committee are of opinion that this island belongs exclusively to the United States, and that there is no legal individual claim intervening. They, therefore, recommend that the bill and memorial be indefinitely postponed.

The bill now under consideration having been referred by the Secretary of War to General McDowell, commanding the Military Division of the Pacific, for report, that officer directed his acting judge-advocate to procure such information respecting it as he might be able from the office of the surveyor-general of California. From the reply of the surveyor-general it will be seen that no private claim to or pre-emption of the island had ever been presented at that office, and that there was no information of any other claims than the claims before the United States land commission of Polack and Limantour, before mentioned. (See Appendix N.)

The foregoing facts respecting the history and the title of Yerba Buena Island have been stated for the reason that the bill in question recites in its third section that, "in the month of February, 1867, the United States * * * ejected the rightful owners" from the island of Yerba Buena, and for the further reason that in the last section of said bill the object of the bill is stated to be, not the transfer of the island to the city of San Francisco for its corporate use, but its transfer for the "uses and purposes" specified in the California State act of March 11, 1858 (before mentioned, and for which act see Appendix H).

This was the language of the United States laws of July 1, 1864, and March 8, 1866. (See Appendices G and Q.)

It has been shown herein that neither of these acts was operative as to Yerba Buena Island, *nor would this bill, if it should become a law, be operative as against that island*, for the reason that the "uses and purposes" specified in the State act of 1858 were confined to the mainland, and the islands were excluded from its action.

In regard to the occupation by the United States subsequent to the United States law of July 1, 1864, it may be stated that in the latter part of 1866, there having been some squatters on the island who refused to vacate the same, the late Chief of Engineers, General Humphreys, on the 10th of November, 1866, addressed a letter to the Secretary of War, reciting the title of the United States and the fact of the contumacy of these squatters, and recommended that possession of the island be obtained by force, if necessary. This letter and the action thereafter had in removing these squatters will be found in Appendix S. In the spring of 1868 Yerba Buena Island was designated by the War Department for an engineer depot and as a station for engineer troops, and accordingly extensive quarters were erected, an engineer depot was established, and a ponton train and siege materials were stored there. (See Appendix T.) A minute survey of the island was made by the officers of engineers at the station in 1869 and 1870, and in 1872 the Board of Engineers carefully drew up plans for batteries, which are now in this office ready for carrying into execution as soon as Congress may appropriate money therefor; and in 1874 the Treasury Department established a light-house and a fog-signal station on the island for the safety of navigation of vessels in San Francisco Bay.

The island is of very great importance to the defense of the United States, and especially the rich city of San Francisco, against a maritime foe; and even if the proposed act was intended to cede it to the city for its corporate use, which it is not, it would no doubt be for the best interests of the city for Congress to refuse such cession, since it occupies precisely the point which is necessary to be fortified to prevent its cap-

ture or destruction by an enemy's vessel, which in the thick weather and fogs which at some seasons prevail on that part of the California coast, might run past the outer batteries. In confirmation of this view of the importance of the retention of the island for defensive purposes, there may be cited the opinions of the Secretary of War (see Appendix U), the Board of Engineers for the Pacific Coast (see Appendices V and W), a former Chief of Engineers, General Delafield (see Appendix X), the Board of Engineers for Fortifications (see Appendix Y), and the late Chief of Engineers, General Humphreys (see Appendix Z).

In conclusion it should be stated that the question of title to the island of Yerba Buena (as well as to the other defensive positions in San Francisco Bay) has frequently been before Congress, the courts, and the War Department, but the claims of those whose cupidity had prompted them to obtain these positions by every means (regardless of the fact that the United States after the conquest gave up all except these positions to citizens of California, at a nominal price, and regardless also of the best interests of the State of California and the city of San Francisco) have uniformly been rejected after full investigation; and it should be further stated that at various times offers have been made to lease or purchase the island of Yerba Buena, and some of these offers have been accompanied by offers of large sums, but the United States has always refused to part with its title to the island.

DECEMBER 16, 1880.

APPENDICES TO REPORT CONCERNING YERBA BUENA ISLAND, SAN FRANCISCO HARBOR, CALIFORNIA.

[Prepared in the office of the Chief of Engineers, U. S. Army, to accompany a letter to the Secretary of War, dated December 16, 1880, returning bill 1419, House of Representatives, Forty-sixth Congress, first session.]

APPENDIX A.

HEADQUARTERS MILITARY DIVISION OF THE PACIFIC,
San Francisco, Cal., April 9, 1866.

GENERAL: * * * * * *

The defense of the bay of San Francisco occupied the attention of the Spanish and Mexican Governments at a very early period, and Fort Point (then called "Point San Joaquin"), "Point San José," *the Islands*, and Point Cavallo, were designated by them as the most proper places for fortifications.

* * * * * * *

About the month of February, 1847, General Kearney, by direction of Mr. Marcy, then Secretary of War, appointed a board of engineer officers to make a reconnaissance of this harbor, and to select the points to be permanently fortified for its defense.

The undersigned was a member of that board, which, before reporting, consulted freely with the late Admiral Dupont, Commodore Mervine, Commodore Montgomery, and other naval officers then serving on this coast.

* * * * * * *

It is perhaps worth mentioning that this board selected, although then ignorant of the fact, precisely the same points that had been previously designated by the Spanish and Mexican authorities for the same purpose. Indeed the natural features of the land are such as to afford scarcely any opportunity for a difference of opinion.

* * * * * * *

Very respectfully, your obedient servant,

H. W. HALLECK,
Major-General, Commanding.

Brig. Gen. E. D. TOWNSEND,
Assistant Adjutant-General of the Army.

APPENDIX B.

SAN FRANCISCO, CAL., *March* 31, 1850.

To the Hon. the SECRETARIES OF THE WAR AND NAVY DEPARTMENTS,
City of Washington:

GENTLEMEN: * * * * * * *

We therefore recommend the reservation for public use of all the land embraced by the several surveys above specified, together with Yerba Buena, Alcatraz, and Angel Islands, in San Francisco Bay.

* * * * * * *

Respectfully submitted on behalf of the commission, by your obedient servant,
JN. L. SMITH,
Brevet Colonel and Senior Member.

For the SECRETARY OF WAR.

APPENDIX C.

The President of the United States exempts and reserves from sale, for public purposes, the following tracts or parcels of land in the State of California:

In the bay of San Francisco, California.

* * * * * * *

3d. Yerba Buena Islands.

* * * * * * *

MILLARD FILLMORE.

WASHINGTON, *November* 6, 1850.

APPENDIX D.

GENERAL LAND OFFICE, *February* 14, 1855.

SIR: In a note of yesterday, from A. Campbell, esq., chief clerk, I am advised that the Hon. Secretary of War desires to obtain from this office "any evidence of the title of the government to the island of Yerba Buena, in the harbor of San Francisco, which was among the reserves made in that harbor by order of President Fillmore;" that "the officer in charge of fortifications there is troubled with the claims of individuals to it under Mexican titles, and has no knowledge of what constitutes the title of government beyond the fact of its being reserved by the President." I have, therefore, the honor to submit the following: That from an abstract in this office, certified on the 31st of January, 1853, by the secretary of the board of commissioners for the adjustment of land claims in California, in connection with a published statement of the *first* proceedings of those commissioners, it appears that a *claim*, *No.* 11, had been filed with that board for the "*Island of Yerba Buena, bay of San Francisco*," by "Joel S. Pollock and others," originally claimed by "Juan José Castro;" "date of claim, November 18, 1838;" "quantity, 500 acres, more or less."

This office is not advised of what action may have been had upon this claim either by the board of land commissioners or the United States district courts under the act of Congress approved March 3, 1851 (U. S. Statutes at Large, vol. 9, p. 631, chap. 41), which confers jurisdiction for the adjustment of foreign titles in California.

As returns of the action of those tribunals are required to be made to the Attorney-General, so that, in case he deems proper, an appeal may be taken to the Supreme Court, I respectfully refer you to him for information in regard to the present condition of the title and in respect to the progress of adjudication under said act.

If, as is presumed to be the case, no final decree of confirmation has been rendered on this claim, I beg leave to suggest that the claimants are not in a predicament to interfere with the United States officer who may hold possession of the island as a United States reserve, for the following reasons: The title to all the lands in California passed to the United States in virtue of the treaty of 1848 at Guadalupe Hidalgo, incumbered, however, by such *bona fide* titles, inceptive or mature, as may have existed at the change of government under the authorities of Spain and Mexico. The act of March 3, 1851, was passed so that a proper discrimination might be made between the public and private property, and until that is done, and a final decree of

confirmation shall have been rendered in a particular case, it can have no standing in a court of law on which an action of ejectment could be maintained.

Further, it is to be observed that the island of Yerba Buena, in the bay of San Francisco, lies, according to a plat (sketch A, herewith) which we have, at a distance of 1.73 statute miles in a northeasterly direction from San Francisco, and at a distance of only 8.07 statute miles from the sea-coast, and although we have not the title papers before us on which to form an opinion as to whether it is merely an inceptive claim or a title in form, our abstract shows the date of the grant to be in 1838, and it follows consequently that the title, even supposing it to be genuine and regular, was made in direct defiance and contravention of the fourth section of the decree of the 18th of August 1824, of the general Constituent Congress of the United Mexican States (Ex. Doc. No. 17, H. Reps., first session Thirty-first Congress, page 142), which declares that "those territories comprised within twenty leagues of the boundaries of any foreign nation, or within ten leagues of the sea-coast, cannot be colonized without the previous approval of the supreme general executive power."

It is also to be remarked that before the aforesaid act of March 3, 1851, was passed for the adjustment of California land titles, the President of the United States, Millard Fillmore, on the 6th of November, 1850, formally, by a written order, exempted and reserved from sale for public purposes the island of Yerba Buena, which order was afterwards, with a letter from this office of the 24th of June, 1851, communicated to the United States surveyor-general at San Francisco, Cal., and the receipt of the same acknowledged by that officer on the 7th of August, 1851. The order issued by the President on the 11th of September, 1851, for the meeting of the board, directed their *first* session to be held on the 8th of December, 1851, at San Francisco. A majority met accordingly, and on the 21st of January, 1852, the board organized in full, adopted rules, regulations, &c.

Hence it appears that the island was reserved by the President *before* the law for the adjudication of California claims was passed, and was notified to the United States surveyor-general at San Francisco before the first meeting of the board.

The authority to make reservations of this kind under acts of 1798, 1806, 1809, as expounded by the Supreme Court of the United States in the case of Wilcox *vs.* Jackson (13 Peters, 1839), is now beyond question. In that case (page 513) the court held as follows: "But we go further, and say that whensoever a tract of land shall have once been legally appropriated to any purpose, from that moment the land thus appropriated becomes severed from the mass of public lands, and that no subsequent law or proclamation, or sale, would be construed to embrace it, or to operate upon it, although no reservation were made of it."

Now, turning from the alleged claim of Pollock and others under Castro, we find—

1st. That *this government* holds the legal title to the island of Yerba Buena in virtue of the treaty of 1848 of Guadalupe Hidalgo, which ceded the territory to the United States.

"A treaty of cession is a deed of the ceded territory; the sovereign is the grantor; the act is his so far as it relates to the cession; the treaty is his act and deed, and *all* courts must so consider it; and deeds are construed in equity by the rules of law." (United States *vs.* Arredondo, 6 Peters, page 783.)

2d. This island, then, was withdrawn from disposal by the government; was set apart and reserved for public purposes before the act of 3d March, 1851, *was passed;* and it is submitted that a just application of the principle laid down in the case of Wilcox *vs.* Jackson (13 Peters) would exclude the Pollock claim from the jurisdiction of the board and of the courts, thereby interdicting the rights of the United States in the premises from being drawn in question or interfered with under that act.

3d. In addition to the admitted right, under our own laws, of this government, through the instrumentality of the President or Secretary of War, to set apart such military reserves, we hold the right to do so as the successor of Spain and Mexico in carrying out their land obligations at the date of the treaty according to their laws and customs, in the same manner that those governments would have done had no change of sovereignty taken place. (*Vide* case of Colon Mitchell, 15 Peters, page 52.)

It results from the considerations submitted in the foregoing that in case no final judicial decree of confirmation should be rendered in favor of Pollock to this island under the said act of 3d March, 1851, that claim will avail nothing, but will remain inoperative and valueless as against the *legal title* of the United States in virtue of the treaty of cession, and that no act of Congress, *general in its terms*, for the disposal of the public lands, can be construed to operate upon or withdraw it from the isolation in which its reservation for public uses has placed it, and that no sale or other individual right can attach to it, unless hereafter ordered by the *express* terms of some statute.

With great respect, your obedient servant,

JOHN WILSON, *Commissioner.*

Hon. JEFFERSON DAVIS,
Secretary of War.

APPENDIX E.

GENERAL LAND OFFICE, *June* 24, 1851.

SIR: I have to inform you that the President of the United States exempts and reserves from sale, for public purposes, the following tracts or parcels of land in the State of California:

In the bay of San Francisco, California.

* * * * * * *

3. Yerba Buena Island.

* * * * * * *

I am, very respectfully, your obedient servant,

J. BUTTERFIELD,
Commissioner.

SAMUEL D. KING, Esq.,
Surveyor-General, San José, Cal.

APPENDIX F.

HEADQUARTERS DEPARTMENT OF THE PACIFIC,
San Francisco, Cal., April 8, 1863.

COLONEL: In anticipation of the possibility of hostile vessels passing the forts, I think it would be well to establish small batteries on Yerba Buena Island, and also on Rincon Point. Will you please to have the island and point examined for this purpose. Captain Selfridge, commandant of the navy-yard at Mare Island, wishes to establish batteries at important points, and asks that Lieutenant Elliot be permitted to go there for the purpose of indicating the best location.

With great respect, I am, colonel, your obedient servant,

G. WRIGHT,
Brigadier-General, U. S. A., Commanding.

Lieut. Col. R. E. DE RUSSY,
Chief Engineer on Pacific Coast, San Francisco, Cal.

FORT POINT, *June* 10, 1863.

GENERAL: In compliance with the request contained in your department letter of the 8th of April last, I have examined and caused to be surveyed the sites on Yerba Buena Island and Rincon Point which appeared to me to be the best adapted for the defenses of the inner harbor of the city.

They consist of two positions on the island and the termination of Beale street on Rincon Point.

* * * * * * *

With regard to Yerba Buena Island, two sites have been selected, the first at the position marked B on the plan, and the second at the position marked C.

The position D is looked upon as essential for a temporary redoubt or block-house to protect the rear of the two batteries.

The battery at B is so arranged as to have a field of fire that covers all the deep water within two miles of the island from north to south. The rear of the island, in the direction of San Antonio, is impassable for sailing vessels in consequence of shoals that extend from the island to the main, and it therefore is unnecessary to plant guns in that direction against shipping.

It is proposed to mount ten heavy guns in this battery.

On the point C it is proposed to erect a second battery, mounting eight 32-pounder guns.

The excavation at this point will cost probably more than those at point B, in consequence of the nature of the position, which is rocky, and will require some blasting. The island, by the bye, is very much of the same character, particularly on the side facing the city, which is composed of high, rocky bluffs.

The distance between Rincon Point, and the island is about one mile and three-quarters; should heavy guns, or rifled ones, be selected for the two batteries on the island and the one on Rincon Point, the cross-fire would extend from shore to shore, and command the anchorage within the reach of the batteries.

Supposing that it would be agreeable to you to have a general map of the whole harbor with the several positions selected for its defense traced thereon, and the field of fire from each indicated by circles drawn every half of a mile to a distance of two miles, including the number of guns bearing in each direction, I have caused to be compiled from drawings in this office a map of that kind for your headquarters.

* * * * * * *

Acompanying this you will receive two sheets of drawings, the one exhibiting the three points selected for the batteries with the trace of the batteries thereon; the other a general map of the harbor of San Francisco, showing the relative position of the defenses in said harbor.

With the highest respect, I have the honor to be, general, your obedient servant,

R. E. DE RUSSY,
Colonel, United States Corps of Engineers.

Brig. Gen. G. WRIGHT,
Commanding Department of the Pacific, San Francisco.

APPENDIX G.

AN ACT to expedite the settlement of titles to lands in the State of California. Approved July 1, 1864.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

* * * * * * *

SEC. 5. *And be it further enacted*, That all the right and title of the United States to the lands within the corporate limits of the city of San Francisco, as defined in the act incorporating said city, passed by the legislature of the State of California on the fifteenth of April, one thousand eight hundred and fifty-one, are hereby relinquished and granted to the said city and its successors, for the uses and purposes specified in the ordinances of said city, ratified by an act of the legislature of the said State, approved on the eleventh of March, eighteen hundred and fifty-eight, entitled "An act concerning the city of San Francisco, and to ratify and confirm certain ordinances of the common council of said city," there being excepted from this relinquishment and grant all sites or other parcels of lands which have been, or now are, occupied by the United States, for military, naval, or other public uses, or such other sites or parcels as may hereafter be designated by the President of the United States, within one year after the rendition to the General Land Office by the surveyor-general of an approved plat of the exterior limits of San Francisco, as recognized in this section in connection with the lines of the public surveys: *And provided*, That the relinquishment and grant by this act shall in no manner interfere with or prejudice any *bona fide* claims of others, whether asserted adversely, under rights derived from Spain, Mexico, or the laws of the United States, nor preclude a judicial examination and adjustment thereof.

* * * * * * *

APPENDIX H.

AN ACT concerning the city of San Francisco, and to ratify and confirm certain ordinances of the Common Council of said city. Approved March 11, 1858.

The people of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1. *Whereas*, The common council of the city of San Francisco passed an ordinance, approved by the mayor on the twentieth day of June, A. D. one thousand eight hundred and fifty-five, which ordinance is in the words and figures following, to wit:

Number eight hundred and twenty-two, ordinance for the settlement and quieting of the land titles in the city of San Francisco.

The people of the city of San Francisco do ordain as follows:

§ 1. It shall be the duty of the mayor to enter at the proper land office of the United States, at the minimum price, all the lands above the natural high-water mark of the Bay of San Francisco, at the time of the admission of California into the Union as a State, situated within the corporate limits of the city of San Francisco, as defined in the act to incorporate said city, passed April fifteenth, one thousand eight hundred fifty-one, in trust for the several use, benefit, and behoof of the occupants or possessors thereof, according to their respective interests.

§ 2. The city of San Francisco hereby relinquishes and grants all the right and claim of the city to the land within the corporate limits, to the parties in the actual possession thereof, by themselves or tenants, on or before the first day of January,

A. D. one thousand eight hundred and fifty-five, and to their heirs and assigns forever; excepting the property known as the slip property, and bounded on the north by Clay street, on the west by Davis street, on the south by Sacramento street, and on the east by the water-lot front, and excepting also, any piece or parcel of land situated south, east, or north of the water-lot front of the city of San Francisco, as established by an act of the legislature of March twenty-sixth, A. D. one thousand eight hundred and fifty-one: *Provided*, Such possession has been continued up to the time of the introduction of this ordinance in the common council; or, if interrupted by an intruder or trespasser, has been or may be recovered by legal process; and it is hereby declared to be the true intent and meaning of this ordinance, that when any of said lands have been occupied and possessed under and by virtue of a lease or demise, they shall be deemed to have been in the possession of the landlord or lessor under whom they were so occupied or possessed: *Provided*, That all persons who hold title to lands within said limits by virtue of any grant made by any ayuntamiento, town council, alcalde, or justice of peace of the former pueblo of San Francisco, before the seventh day of July, one thousand eight hundred and forty-six, or grants to lots of land lying east of Larkin street and northeast of Johnston street, made by any ayuntamiento, town council, or alcalde, of said pueblo, since that date, and before the incorporation of the city of San Francisco by the State of California; and which grant, or the material portion thereof, was registered, or recorded in a proper book of record deposited in the office, or custody, or control of the recorder of the county of San Francisco, on or before the third day of April, A. D. one thousand eight hundred and fifty; or by virtue of any conveyance duly made by the commissioners of the funded debt of the city of San Francisco, and recorded on or before the first day of January, one thousand eight hundred and fifty-five, shall, for all the purposes contemplated by this ordinance, be deemed to be the possessors of the land so granted, although the said lands may be in the actual occupancy of persons holding the same adverse to the said grantees.

§ 3. The patent issued or any grant made by the United States to the city shall inure to the several use, benefit, and behoof of the said possessors, their heirs and assigns, mentioned in the preceding section as fully and effectually to all intents and purposes as if it were issued or made directly to them individually and by name.

§ 4. The city, however, as a consideration annexed to the next two preceding sections, reserves to itself all the lots which it now occupies or has already set apart for public squares, streets, and sites for school-houses, city hall, and other buildings belonging to the corporation, and also such lots and lands as may be selected and reserved for streets and other public purposes under the provisions of the next succeeding sections.

§ 5. The city shall have the right to proceed to lay out and open streets, as soon as the corporation may deem it expedient, in that part of the city west of Larkin street and southwest of Johnston street, and reserves the right to take possession of such lands as it may be necessary to occupy for that purpose, without compensation, and to assess, in the manner provided by the present or any existing charter of the city, upon the lands bounded on such streets, the whole expense of laying out, opening, grading, and constructing the same; and payment of the costs of said improvements shall be deemed a charge upon the lands mentioned in this section, to which the city of San Francisco relinquishes her right and title by the second and third sections of this ordinance.

§ 6. The city shall also have the right to select and set apart from the lands west of Larkin street and southwest of Johnston street as many lots, not exceeding one hundred and thirty-seven and a half feet square each, as the mayor and common council may, by ordinance, determine to be necessary for sites for school-houses, hospitals, fire-engine houses, and other public establishments necessary and proper for the use of the corporation, and may lay out and reserve upon the said lands, at convenient and suitable points and distances, public squares, which shall not embrace more than one block corresponding in size to the adjoining blocks: *Provided*, That the selection shall be made within six months from the time of the passage of this ordinance, and that the city shall not, without due compensation, occupy, for the purposes mentioned in this section, after the laying out the streets aforesaid, more than one-twentieth part of the land in the possession of any one person, and that such possessor shall voluntarily assent thereto, or, refusing to do so, shall not be entitled to the benefit of any concession contained in the second and third sections of this ordinance.

§ 7. The lots and lands reserved for the use of the corporation, under the provisions of the next preceding section, shall be selected in localities likely to be most convenient and suitable for their respective uses, and in such proportion to the quantity in the possession of the respective occupants as to make the apportionment as nearly equal as circumstances will admit.

§ 8. The selection of said lands and lots shall be made by a commission to consist of three persons, who shall be chosen by the common council in joint convention,

who shall report the same to the common council for its approval; and upon such approval deeds of release to the corporation for the lands thus selected shall be executed, acknowledged, and recorded, in which deeds shall be specified the uses for which they are granted, reserved, and set apart, respectively.

§ 9. Although the city hereby renounces in favor of the actual possessors, in accordance with the provisions of section second, any right or claim of its own, nothing in this ordinance is intended to prejudice any other outstanding title to the said lands adverse to the said possessors.

§ 10. Application shall be made to the legislature to confirm and ratify this ordinance, and to Congress to relinquish all the right and title of the United States to the said lands, for the uses and purposes hereinbefore specified.

§ 11. Nothing contained in this ordinance shall be construed to prevent the city from continuing to prosecute to a final determination her claim now pending before the United States Land Commission for pueblo lands, for the several use, benefit, and behoof of the said possessors mentioned in section two, as to the lands by them so possessed, and for the proper use, benefit, and behoof of the corporation as to all other lands not hereinbefore released and confirmed to the said possessors.

§ 12. That all ordinances or parts of ordinances conflicting with this ordinance, or any of its provisions, be and the same are hereby repealed.

[Approved June twentieth, one thousand eight hundred and fifty-five.

S. P. WEBB, *Mayor.*]

And whereas the said common council passed another ordinance, approved by the mayor of said city September twenty-seven, A. D. one thousand eight hundred and fifty-five, which last-mentioned ordinance is in the words and figures following, to wit:

Number eight hundred and forty-five.—Ordinance providing for selecting and designating public squares and reservations for hospitals, fire-engines, and school purposes, and for adopting the plan of streets in the western and southwestern portion of the city, according to the provisions of ordinance number eight hundred and twenty-two and confirmatory of said ordinance number eight hundred and twenty-two.

The people of the city of San Francisco do ordain as follows:

§ 1. Under and by virtue of the provisions of the ordinance of the common council, number eight hundred and twenty-two, entitled "An ordinance for the settlement and quieting of land titles in the city of San Francisco," approved June twentieth, one thousand eight hundred and fifty-five, the board of aldermen and board of assistant aldermen shall meet in joint convention, at their next regular meeting after the passage of this ordinance, and proceed to elect three commissioners, who shall have the powers, and proceed to discharge the duties specified in section eight of said ordinance number eight hundred and twenty-two.

§ 2. It shall be the duty of the city surveyor, acting in conjunction with the said commissioners, and with their concurrence, to furnish, by way of recommendation, to the common council, within one month from the date of their appointment, a plan for the location and dimensions of the streets to be laid out within the city limits, west of Larkin and southwest of Johnston streets, upon which plan shall also be designated the lots and grounds selected by the said commissioners for the use of the city under the provisions of the aforesaid ordinance number eight hundred and twenty-two: *Provided*, That the compensation of said commissioners shall not exceed the sum of one hundred dollars each, payable when the common council may legally make an appropriation therefor.

§ 3. The said ordinance number eight hundred and twenty-two, referred to in the preceding section one, is hereby re-ordained, ratified, and confirmed in all its parts.

[Approved September twenty-seventh, one thousand eight hundred and fifty-five.

JAMES VAN NESS, *Mayor.*]

And whereas, in pursuance of the aforesaid ordinances, commissioners were appointed by the common council, who, in conjunction with the city surveyor of said city, agreed upon and reported, for the approval of the common council, a plan for the location of streets, public squares, and lots for public uses, to be laid out west of Larkin and southwest of Johnston streets in said city, accompanied by a map of the same, which said plan and map was, by the justices of peace, exercising the powers of a board of supervisors of the city and county of San Francisco, adopted, approved, and ratified by an order bearing date the sixteenth day of October, A. D. one thousand eight hundred and fifty-six, which is in the words and figures following, to wit:

The board of supervisors of the city and county of San Francisco do ordain as follows:

§ 1. That the plan or map of the western addition reported by the commission created under an ordinance of the last common council of the city of San Francisco, be adopted by this board, and be declared to be the plan of the city, in respect to the location and establishment of streets and avenues, and the reservations of squares

and lots for public purposes in that portion of the then incorporated limits of said city lying west of Larkin and southwest of Johnston streets.

Be it therefore enacted, That the within and before-recited order and ordinances be, and the same are hereby, ratified and confirmed; and all the land entered, or to be entered, in the United States land office, in pursuance of section one of the first recited of said ordinances, in trust, shall pass and inure to, and be deemed to have immediately vested in the occupants thereof, for their several use and benefit, according to their respective interests, in execution of the trust designated in an act of Congress entitled "An act for the relief of citizens of towns upon the public lands of the United States, under certain circumstances," approved May twenty-third, one thousand eight hundred and forty four, as extended and applied by an act of Congress entitled "An act to provide for the survey of the public lands in California, the granting of pre-emption rights therein, and for other purposes," approved March third, one thousand eight hundred and fifty-three; and it shall be the duty of all courts and officers to take judicial notice of the said order and ordinances, as hereinbefore recited, without further proof, as fully and effectually, to all intents and purposes, as if they were public acts of the State legislature.

§ 2. That the grant or relinquishment of title made by the said city in favor of several possessors, by sections two and three of the ordinance first above recited, shall take effect as fully and completely, for the purpose of transferring the city's interest and for all other purposes whatsoever, as if deeds of release and quit-claim had been duly executed and delivered to and in favor of them individually and by name; and no further conveyance or other act shall be necessary to invest the said possessors with all the interest, title, rights, benefits, and advantages which the said order and ordinances intend or purport to transfer or convey, according to the true intent and meaning thereof: *Provided*, That nothing in this act shall be so construed as to release the city of San Francisco or city and county of San Francisco from the payment of any claim or claims due or to become due this State against said city, or city and county, nor to effect or release to said city and county any title this State has or may have to any lands in said city and county of San Francisco.

APPENDIX I.

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
Washington, D. C., March 31, 1879.

COLONEL: In reply to your letter of 26th instant, I have the honor to state that the Stratton survey of the pueblo of San Francisco, made between March, 1867, and January, 1868, and approved by Surveyor-General Upson, August 13, 1868, is the only official survey in this case on file in this office.

This survey purports to have been made under the final confirmation of the pueblo title in the city of San Francisco by the act of Congress approved March 8, 1866, and if a prior survey of the exterior limits of the city of San Francisco, as recognized in the fifth section of the act of July 1, 1864, has been made and approved by the surveyor-general, this office has no knowledge of the same.

Very respectfully, your obedient servant,

J. A. WILLIAMSON,
Commissioner.

Lieut. Col. H. G. WRIGHT,
Acting Chief of Engineers, Washington, D. C.

APPENDIX K.

ENGINEER DEPARTMENT,
Washington, October 2, 1866.

SIR: By a law passed July 1, 1864 (chapter 194, section 5, Statutes at Large, volume 13, pages 333, 334), the United States relinquished to the city of San Francisco all its lands within the city limits, except such as are or had been occupied for military or other public uses.

By the law of California chartering the city of San Francisco, passed April 15, 1851, par. 2, the city boundaries are defined as coincident with those of the county of San Francisco on the northern and eastern sides.

By the State law of February 18, 1850, par. 8, the county of San Francisco is defined to include Alcatraces, Yerba Buena, and Farallones Islands, and Yerba Buena lies to

the northward and eastward therein. The government has surveyed the island of Yerba Buena, and batteries have been projected for its occupation, but the works have not been built. Under these circumstances the United States attorney at San Francisco has expressed the fear to Captain Elliot, the engineer officer on the spot, that the government may have passed the ownership of Yerba Buena Island to the city. But it is further provided in the law of the United States cited above that such sites or parcels of these lands as may be designated by the President within one year after the rendition to the General Land Office of a plat of the city, be excepted from the transfer. On inquiring of the Commissioner of the General Land Office, it is ascertained that the plat referred to in the law has not yet been transmitted to that office.

I have the honor to recommend, therefore, that the President now designate Yerba Buena Island as an exception to the relinquishment, it being of importance for defensive purposes.

* * * * * * *

Very respectfully, &c.,

I. C. WOODRUFF,
Lieutenant-Colonel of Engineers,
Brevet Colonel, U. S. A., in charge.

EXECUTIVE MANSION,
Washington City, October 12, 1866.

Whereas the island of Yerba Buena, in the Bay of San Francisco, is needed for defensive purposes, and has been surveyed by the government, and batteries projected and planned for its occupation:

The within application is approved and referred to the Secretary of the Interior with directions to except and reserve the island of Yerba Buena in the Bay of San Francisco from the relinquishment and grant to the city of San Francisco, Cal., authorized by the act of Congress approved July 1, 1864, and to designate said island as so excepted and reserved; and it is ordered that the said island be retained by the United States for military uses.

ANDREW JOHNSON.

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
October 17, 1866.

SIR: At the request of the Hon. Secretary of War, addressed to the President on the 8th instant, that Yerba Buena Island may be designated as an *exception to the relinquishment* of land to the city of San Francisco, Cal., authorized by the fifth section of an act approved July 1, 1864, Statutes at Large, vol. 13, page 333, the President, by his order of the 12th inst., directed that the said island be retained by the United States for military uses. On the receipt of this communication, you are requested to make proper annotation on the records in your office, referring to these instructions for your authority for doing so, and advise this office of having done so.

I am, very respectfully, your obedient servant,

JOS. S. WILSON,
Commissioner.

LAWREN UPSON, Esq.,
Surveyor-General, San Francisco, Cal.

APPENDIX L.

DEPARTMENT OF THE INTERIOR,
GENERAL LAND-OFFICE,
December 21, 1866.

SIR: I have the honor to acknowledge the receipt by reference from the department proper of the letter of the 26th instant from the Secretary of War and accompanying papers in relation to the President's order of November 23, 1866, making a reservation for military purposes at Monterey, Cal., and inclose herewith a copy of instructions from this office of 28th November to the surveyor-general of California not to interfere with said reservation by surveys either of public lands or private claims.

* * * * * * *

Further. It is a principle of Spanish and Mexican law that the government has a right to its military sites or reservations for public uses, even in cases where such sites fall within a concession, such rights having, like all other public rights, passed by treaty to the United States. (See case of Colin Mitchell *vs.* The United States, 9 Peters, p. 711, and 15 Peters, p. 80.)

When that case in the Forbes grant was before the Supreme Court of the United States on appeal at the January term 1835, the judicial confirmation was awarded, "with the exception of so much of the last-mentioned tract as includes the fortress of St. Mark's and the territory directly and immediately adjacent and appurtenant thereto," which the decree "reserved for the use of the United States," the Supreme Court at the same time having ordered that "the extent and boundaries of the land thus excepted and reserved should be ascertained and determined by the superior court of the middle district of Florida." Proceedings were had accordingly by that court, which rendered a decree fixing the boundaries of the reservation, and that decree was affirmed by the Supreme Court of the United States at the January term 1841. (15 Peters, p. 80.)

Under the laws and usages of Spain, then, it was held that our government, as the successor in sovereignty, of course succeeded, as stated, to all public rights, and among these had the right to elect this military site.

This principle was applied and the right of the United States duly asserted in the case of the site of Fort Jackson, which falls within the Spanish concession by Baron de Carondelet to St. Maxent in 1795.

The matter was reviewed by Attorney-General Clifford in an opinion dated June 4, 1847, whereby the decision of the General Land Office was sustained, and a patent for the St. Maxent claim was issued with an express reservation therein of Fort Jackson Reserve, according to Spanish law.

The General Land Office, then, regards the right of the United States to the Monterey Reserve as resting upon a basis too well established ever to be disturbed, and as a consequence no adverse interest, either in law or equity, is acknowledged by this office as existing thereto.

* * * * * * *

With great respect, your obedient servant,

JOS. S. WILSON,
Commissioner.

Hon. O. H. BROWNING,
Secretary of the Interior.

APPENDIX M.

Extracts from Judge Dwinell's History of San Francisco, relating to government reservations, compiled December, 1869.

ISLANDS.

Islands situated in navigable waters near the shore, and especially those within harbors and capable of being fortified or planted with batteries, have generally been retained as the property of the sovereign by all nations, and no people have been more jealous in this respect than the Spanish. So notorious was this fact that the Supreme Court of the United States consider an alleged grant of such an island as almost presumptively false on its face. (U. S. *vs.* Ohio, 23 Howard, U. S. C. Ct. Rep., 286.) The history of the islands in the Bay of San Francisco is a simple yet a curious one. They were first reserved by the President of the United States for military purposes, and then, after a lapse of thirteen years, those within the city and county of San Francisco, and not occupied by the United States, were, by what was apparently a mistake in act of Congress, granted to the city of San Francisco.

The following is a short history of the matter: In 1851, President Fillmore reserved for public purposes the following islands situate in the Bay of San Francisco: Yerba Buena Island, Alcatraz Island; and Angel Island; Alcatraz Island and a portion of Angel Island were occupied, and continued to be so, with military work. The Van Ness ordinance provided that application should be made to Congress to relinquish to the city of San Francisco all the right and title of the United States to the lands embraced within the scope of that ordinance, for the uses and purposes specified in it, so that if the pueblo title failed, a valid title would insure by grant from the United States. Accordingly, by section 5 of an act of Congress, entitled "An act to expedite the settlement of titles to lands in the State of California," approved July 1, 1864, an attempt was made by Congress to confirm the Van Ness ordinance, as desired. But the author of that act seems to have overlooked the fact that the Van Ness ordinance did not embrace all the lands lying within the city limits under the charter of 1851, *but extended only to the line of the water front*, while the boundary of the city under the charter of 1851 on the east and *north was the same as that of the county*, and included the following islands situate in the Bay of San Francisco, namely, Yerba Buena, Angel Island, Alcatraz, the Farallones, and Mission Rock. This will be apparent from a comparison of the respective boundaries. The Van Ness ordinance, after grant-

ing to actual occupants all the right and claim of the city to the lands within the corporate limits," excepts "any piece or parcel of land situate south, east, and north of the water front of the city of San Francisco, as established by act of the legislature of March 26, 1851." The provision fixing the charter line of 1851 concludes as follows: "Its southern and eastern boundaries shall be coincident with *those of the county of San Francisco.* (Laws of 1851, page 351, chap. 84, sec. 2.) The boundaries of the county of San Francisco, as fixed by the laws of 1851, chapter 14, page 174, section 8, are thus defined: Beginning at the low-water mark on the west side of the entrance of the Bay of San Francisco, and following the line of low-water mark along the southern and anterior coast of said bay to a point due southwest of Golden Rock" (Nine Mile or Red Rock); "thence due southeast to a point within three miles of high-water mark of Contra Costa County; thence in a southerly direction to a point three miles from and opposite the mouth of Alameda Creek," &c.

The city limits under the charter of 1851, therefore, included the following islands, namely, Angel Island, Alcatraz, Yerba Buena, the Farallones, and Mission Rock; and these islands are, therefore, included in the body of the grant; that is to say, within the general description of the lands granted. But this act of Congress, however, contains the following exception: "There being excepted from this relinquishment and grant all sites or other parcels of lands *which have been or are now occupied* by the United States for military, naval, or other public uses, or such other sites or parcels as may be hereafter designated by the President of the United States within one year after the rendition of an approved plat of the exterior limits of San Francisco, as recognized in this section, in connection with the public surveys." It will be observed that "lands heretofore reserved for the use of the United States" are not the lands excepted from the grant, but only those "which have been, or now are, *occupied* by the United States," and the only islands which at the date of the said act of Congress were not and never had been occupied by the United States were Yerba Buena, Farallones, Mission Rock, and a part of Angel Island.

These islands, any or all of them, are still liable to be reserved by the President, as above provided, within one year after the filing in the General Land Office of an approved survey of the exterior limits of the city of San Francisco, according to the charter of 1851. Even the grant, as it stands, is declared to be for the "uses and purposes specified" in the Van Ness ordinance, which still further demonstrates the mistake made by Congress, for there is no consideration of equity, convenience, or policy which would grant Yerba Buena Island, of one hundred and sixty acres, to any two or three squatters who may have scrambled for its possession on the first day of January, 1855.

APPENDIX N.

JUDGE-ADVOCATE'S OFFICE,
HEADQUARTERS MILITARY DIVISION PACIFIC
AND DEPARTMENT OF CALIFORNIA,
Presidio, S. F., August 17, 1880.

Respectfully returned to the Assistant Adjutant-General, Military Division Pacific and Department of California, with copies (16 in number) of all papers on file at these headquarters bearing upon the subject of the title of the United States to Yerba Buena Island; also communication from the surveyor-general's office, district of California, of the 11th instant, upon the same subject.

Attention is particularly invited to inclosure marked No. 6, copy of a letter addressed by the Chief of Engineers, November 10, 1866, to the Secretary of War, which succinctly and perfectly covers the whole ground.

The conclusions therein drawn that "*the title of the United States to the island of Yerba Buena is therefore complete*" seems to be sound, and not less so the opinion of the surveyor-general of California, expressed to me verbally, that "it is not the *title* to the island of Yerba Buena that needs quieting."

B. B. KEELER,
Captain Eighteenth Infantry, A. D. C., Acting Judge-Advocate.

DEPARTMENT OF THE INTERIOR,
UNITED STATES SURVEYOR-GENERAL'S OFFICE
FOR THE DISTRICT OF CALIFORNIA,
San Francisco, August 11, 1880.

SIR: This office is in receipt of your letter of the 5th instant indorsed upon a copy of a letter dated June 15, 1880, from Hon. H. A. Herbert, of Judicial Committee, House of Representatives, to Hon. Alexander Ramsey, Secretary of War, asking for information touching title to the island "Yerba Buena," accompanied by H. R. bill

1419, and copies of sixteen papers among the records at your headquarters bearing upon the subject.

By your letter this office is requested to furnish any information it may have upon the subject of the title of the United States to said island.

Upon examination, with the exception of certain papers copies of which are included in the sixteen papers accompanying your communication, I find nothing touching the title save the papers in the claim of Joel S. Polock for the island of Yerba Buena, in case No. 11 on the docket of the United States board of land commissioners, and the papers in case No. 549 before said commission—"Jose Y. Limantour, claimant for the islands of Farallones, Alcatraz, and Yerba Buena," &c.

By the register of the district court of the United States for the northern district of California, it appears that the Polack claim was rejected by the court March 17, 1858, on the ground that the claim was not proved, and that an order granting appeal was filed August 31, 1867, notice of appeal being filed the same day.

No subsequent proceedings appear to have been had.

By said register it appears that the Limantour claim was rejected by the court November 19, 1858, and that no appeal was taken.

The opinions of the court in both cases may be found in Hoffman's Reports, Land Cases, pages 284 and 389.

Believing that the papers filed with the land commission would be of no value in the present instance, the claims based upon them having been finally adjudicated, I have had no copies made, but will furnish them if you so desire.

The papers received with your communication are returned herewith, as requested.

Very respectfully, your obedient servant,

THEO. REICHART,
Chief Clerk.

B. B. KEELER,
Captain Eighteenth Infantry, A. D. C.,
Acting Judge-Advocate, Presidio Reservation.

APPENDIX O.

SAN FRANCISCO, CAL., *October* 23, 1867.

SIR: Mr. Thomas H. Dowling will proceed hence to Washington, D. C., to solicit of the government a recognition of the valuable services rendered by him in defense of Yerba Buena Island against the fraudulent claims which have been asserted thereto. His time, energies, and money have been devoted to this object for the past fifteen years, and after having defeated the claims referred to, he was finally himself turned out of possession by the military authorities, completely impoverished in fortune, and without the slightest recognition or compensation of those fifteen years of devoted services to the government, without which the island would in all probability have been confirmed to the grantee under the fraudulent grant derived from Alvarado. Those services were rendered in part when I was the attorney of the United States, and were continued under my successor until complete success attested their value, in the defeat of the fraudulent grant. The records of the United States courts establish conclusively the importance of Mr. Dowling's services, and I have no doubt the distinguished judge of the United States district court would cheerfully accede to him all the merit he claims therefor. Mr. Dowling was for many years the sole occupant of the island, made valuable improvements thereon, and reclaimed from the tide water about two and one-half acres of land which have been thereby added to the area of the island. His title to this can hardly be questioned, and yet the military have ejected him from it or refused to allow him, as I am informed, the claim and quiet possession thereof. Assuming (what is believed to be true) that Mr. Dowling's money and services defeated the fraudulent grant and established the government title thereto, it seems to follow as an equitable sequence that he should be adequately compensated.

Very respectfully,

S. W. INGE.

Hon. ANDREW JOHNSON,
President of the United States, Washington, D. C.

The above facts are true, as the claim for the island was defeated in the United States district court while I was United States district attorney.

WILLIAM BLANDING.

SAN FRANCISCO, CAL., *October* 23, 1867.

The claim of Polack *et al.* for Yerba Buena Island was defeated mainly, I believe, through the energetic exertions of Mr. Dowling in procuring witnesses and adducing evidence to expose the very well contrived fraud on which it was based. Mr. Dowling was understood to have been in possession of the island for a considerable time. The precise nature of the assistance rendered to the district attorney and the expenses, if any, incurred by him, are of course better known to those officers than to myself. I consider that he has rendered an important service to the government, and as he, unlike other settlers on lands fraudulently claimed under Mexican grants, has derived no personal advantage from his efforts his claim would seem to be entitled to favorable consideration.

OGDEN HOFFMAN,
District Judge.

I concur in the foregoing remarks of Judge Hoffman.

H. H. HAIGHT.

A true copy of the original letter.

APPENDIX P.

Final decree confirming the claim of the city of San Francisco to its pueblo lands, entered May 18, 1865.

CITY OF SAN FRANCISCO
vs.
THE UNITED STATES.

The appeal in this case taken by the petitioner, the city of San Francisco, from the decree of the board of land commissioners to ascertain and settle private land claims in the State of California, entered on the twenty-first day of December, 1854, by which the claim of the petitioner was adjudged to be valid, and confirmed to lands within certain described limits, coming on to be heard upon the transcript of proceedings and decision of said board, and the papers and evidence upon which said decision was founded, and further evidence taken in the district court of the United States for the northern district of California pending said appeal, the said case having been transferred to this court by order of the said district court, under the provisions of section four of the act entitled "An act to expedite the settlement of titles to lands in the State of California," approved July 1, 1864, and counsel of the United States and for the petitioner having been heard and due deliberation had, it is ordered, adjudged and decreed that the claim of the petitioner, the city of San Francisco, to the land hereinafter described is valid, and that the same be confirmed.

The land of which confirmation is made is a tract situated in the county of San Francisco, and embracing so much of the extreme upper portion of the peninsular above ordinary high-water mark (as the same existed at the date of the conquest of the country, namely, the seventh of July, A. D. 1846), on which the city of San Francisco is situated, as will contain an area of four square leagues; said tract being bounded on the north and east by the bay of San Francisco, on the west by the Pacific Ocean, and on the south by a due east and west line drawn so as to include the area aforesaid, subject to the following deductions, namely: Such parcels of land as have been heretofore reserved or dedicated to public uses by the United States; and also such parcels of land as have been by grants from lawful authority vested in private proprietorship, and have been finally confirmed to parties claiming under said grants by the tribunals of the United States, or shall hereafter be finally confirmed to parties claiming thereunder by said tribunals, in proceedings now pending therein for that purpose; all of which said excepted parcels of land are included within the area of four square leagues above mentioned, but are excluded from the confirmation to the city. This confirmation is in trust, for the benefit of the lot holders, under grants from the pueblo, town, or city of San Francisco, or other competent authority, and as to any residue, in trust for the use and benefit of the inhabitants of the city.

FIELD, *Circuit Judge.*

SAN FRANCISCO, *May* 18, 1865.

APPENDIX Q.

AN ACT to quiet the title to certain lands within the corporate limits of the city of San Francisco.
Approved March 8, 1866.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all the right and title of the United States to the land situated

within the corporate limits of the city of San Francisco, in the State of California, confirmed to the city of San Francisco by the decree of the circuit court of the United States for the northern district of California, entered on the eighteenth day of May, one thousand eight hundred and sixty-five, be, and the same are hereby, relinquished and granted to the said city of San Francisco and its successors, and the claim of the said city to the said land is hereby confirmed, subject, however, to the reservations and exceptions designated in said decree, and upon the following trusts, namely: That all the said land, not heretofore granted to said city, shall be disposed of and conveyed by said city to parties in the *bona fide* actual possession thereof, by themselves or tenants, on the passage of this act, in such quantities and upon such terms and conditions as the legislature of the State of California may prescribe, except such parcels thereof as may be reserved and set apart by ordinance of said city for public uses: *Provided, however*, That the relinquishment and grant by this act shall not interfere with or prejudice any valid adverse right or claim, if such exist, to said land or any part thereof, whether derived from Spain, Mexico, or the United States, or preclude a judicial examination and adjustment thereof.

APPENDIX R.

SAN FRANCISCO, CAL., *October* 8, 1869.

SIR: * * * In this connection I would state that one Thomas H. Dowling, for some years a squatter on the island, has made a claim of title to the island of recent manufacture, claiming that a Captain Nye had placed goats on the island; whereas, in claim No. 11 of the United States land commission for settling land claims in the State of California, Captain Nye testified that he had never claimed the island, and Dowling testified that he only held title as a pre-emptioner under the State law of 1852.

I have the honor to be, sir, your obedient servant,

J. S. POLACK.

To His Excellency Gen. W. T. SHERMAN,
Secretary of War, &c., Washington, D. C.

Extract from Polack's printed statement, 1869.

The following is a portion of the testimony that can be produced. * * * Capt. G. H. Nye says: * * * "I had during the years 1851 and 1852 frequent conversations with Dowling and Jennings, who were trespassing on the island, relative to the possession and occupation of Nathan Spear, of Goat Island, and in consequence, in the year 1852, or thereabouts, I was produced as a witness on the part of the United States Government before the board of United States land commission, in San Francisco, to testify to the facts of proving prior possession and occupation of the island by Spear to defeat a claim purporting to be a Mexican grant of the island from Governor Alvarado to one Juan José Castro," afterwards known as the Polack claim, which was rejected by the United States circuit court as fraudulent.

Extract from a memorial of Thomas Dowling (1869) *now in Engineer Department.*

If, however, any portion of said island is required or demanded by the Government of the United States for any public use, Mr. Dowling does not propose to raise any question with the government about the title, but simply to establish his right, in order that he may receive from the government that just compensation for his private property which the Constitution of the United States guarantees to him.

APPENDIX S.

ENGINEER DEPARTMENT,
Washington, November 10, 1866.

Hon. E. M. STANTON,
Secretary of War:

SIR: The island Yerba Buena, in the harbor of San Francisco, was reserved for public uses by the President of the United States, November 6, 1850.

By a law passed July 1, 1864 (chap. 194, sec. 5, Statutes at Large, vol. 13, pp. 333, 334), the United States relinquished to the city of San Francisco all its lands within the city limits, except such as are or had been occupied for military or other public uses.

By the law of California, chartering the city of San Francisco, passed April 15, 1857, par. 2, the city boundaries are defined as coincident with those of the county of San Francisco on the northern and eastern sides.

By the State law of February 18, 1850, par. 8, the county of San Francisco is defined to include Yerba Buena Island. It is further provided in the law of the United States of July 1, 1864, referred to above, that such sites or parcels of these lands as may be designated by the President within one year after the rendition to the General Land Office of a plat of the city, be excepted from the transfer. It is not known whether the plat mentioned in the law has yet been transmitted to the General Land Office. However, by order of the President October 12, 1866, the Secretary of the Interior was directed "to except and reserve the island of Yerba Buena, in the Bay of San Francisco, from the relinquishment and grant to the city of San Francisco, authorized by the act of Congress approved July 1, 1864, and to designate the said island as so excepted and reserved."

The title of the United States to the island of Yerba Buena is therefore complete.

In an indorsement upon a letter dated August 30, 1866, from United States attorney, Delos Lake, of north district of California, to General McDowell, commanding Department of California, General H. W. Halleck, commanding Military Division of the Pacific, remarks, with reference to the island of Yerba Buena, "It cannot now be occupied by the United States without employment of force, or the institution of legal proceedings to oust the squatters. General McDowell has been unwilling to employ force without the orders of the War Department, as it would inevitably subject him to suits and prosecutions, and the district attorney would be unwilling to institute legal proceedings without being duly instructed to do so."

I have the honor to recommend that the general commanding the Military Division of the Pacific be informed of the President's order of October 12, 1866, and be instructed to regain possession of the island either by force or through legal proceedings, leaving it to his discretion to allow to remain on the island such persons as are now upon it who may be willing to admit in writing the possessory right of the United States, agree to vacate at any required time, and to pay a proper rent.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,
Chief of Engineers, Brig. and Bvt. Major General.

[Indorsement.]

Approved by the President of the United States and respectfully transmitted to Major-General Halleck.

By order of the Secretary of War.

E. D. TOWNSEND,
Assistant Adjutant-General.

ADJUTANT-GENERAL'S OFFICE,
November 20, 1866.

Official copies.

ROBERT N. SCOTT,
Assistant Adjutant-General.

[First indorsement on copy.]

HEADQUARTERS MILITARY DIVISION OF THE PACIFIC.
San Francisco, December 14, 1866.

Respectfully referred to Major-General McDowell, who will establish a small military post on Yerba Buena Island, in accordance with the within instructions.

In regard to the ejectment of the squatters who will not attorn to the United States, he will consult the United States district attorney.

By order of Major-General Halleck.

ROBERT N. SCOTT,
Assistant Adjutant-General.

[Second indorsement.]

HEADQUARTERS DEPARTMENT OF CALIFORNIA,
San Francisco, August 31, 1867.

Respectfully returned to division headquarters.

The United States have complete possession of the island, all the occupants having taken out leases.

IRVIN McDOWELL,
Bvt. Major-General, Commanding Department.

APPENDIX T.

[Special Orders No. 34.]

HEADQUARTERS OF THE ARMY, ADJUTANT-GENERAL'S OFFICE,
Washington, February 10, 1868.

(Extract.)

* * * * * * *

2. The island of Yerba Buena, San Francisco Harbor, California, is hereby designated as an engineer station and depot.

Company D, Engineers, now on duty at Fort Point, California, will immediately take post on that island, under the orders of the Chief of Engineers, from whom it will receive all orders and instructions relative to its service on the Pacific coast.

The commanders of the Division of the Pacific and of the Department of California will give the orders necessary to carry this transfer into effect.

The Quartermaster's Department will furnish transportation and such supplies as the occupation of this island may entail.

* * * * * * *

By command of General Grant.

E. D. TOWNSEND,
Assistant Adjutant-General.

Official.

E. D. TOWNSEND,
Assistant Adjutant-General.

APPENDIX U.

WAR DEPARTMENT,
Washington City, May 28, 1866.

SIR: In reply to your communication of May 21, transmitting Senate bill No. 273 "to authorize the President of the United States to convey to W. P. Rogers and his associates the island of Yerba Buena in the harbor of San Francisco," and asking the views of the department on the expediency of the proposal, I have the honor to send you the Chief Engineer's report of this date on the subject, as follows:

* * * * * * *

In the views of the Chief Engineer I fully concur, and consider it highly prejudicial to the interests of the government to convey to any person or association any portion of the island or right or privilege in it under any pretext whatever.

Very respectfully, sir, your obedient servant,

EDWIN M. STANTON,
Secretary of War.

Hon. H. WILSON,
Chairman of Military Committee, U. S. Senate.

APPENDIX V.

Copy of an extract from a report by the Board of Engineers for the Pacific coast, dated January 8, 1868, *on an application for a cession of a portion of Yerba Buena Island by the United States, for railroad purposes.*

* * * * * * *

The great importance of Yerba Buena Island, if occupied in time of war with heavy long-range guns, as securing the water front of the city of San Francisco from occupation by a hostile fleet, should such be found in the harbor on the declaration of war, or should it succeed in entering the bay, either by force, by stratagem, by surprise in a dense fog or the darkness of night, has been acknowledged by all our engineers who have considered the subject.

The island will cover by its fire the entire water front of the present city of San Francisco, and it is the last point from which the anchorage in front of the city can be defended.

Remove this island and there will be nothing but a naval force to prevent an enemy's fleet, or even a single man-of-war, if the outer batteries should prove insufficient to prevent his entrance into the bay, from taking position in front of the city, beyond effective range of Alcatraz Island, and either destroying it or levying such contributions as cupidity may dictate.

* * * * * * *

Doubtless there are persons who attach more importance to this island for railroad and commercial uses than they do for military purposes, and those who are interested in securing it for purposes of private gain may argue that the defense of the city front may safely be left to the Navy alone, unaided by land batteries.

As such a doctrine would render our Navy passive in time of war, confining it to home duty, and otherwise violate the well-established principles of harbor defense, this board may safely leave its confutation, should it ever be publicly advanced, to the department.

We start, therefore, with the idea that this island is absolutely necessary for the protection of the city front; that batteries should be erected upon it and armed with our heaviest guns, which should control by their fire all the anchorages within range from whence an enemy might injure the city or otherwise cripple its defense. We may add, too, that this island has a prospective value of great importance to the defense of the city.

It is the last point from which a defense can be made, and on account of its location and the ease with which it may be defended it will be the most secure position in the harbor. It will probably, therefore, be occupied in time of war for ordnance purposes; have an arsenal with all the necessary establishments for the storage and safe-keeping of artillery, ammunition, and small-arms.

* * * * * * *

We proceed to give the reasons for this opinion:

The board first carefully examined the island and came to the conclusion that it might be securely and cheaply fortified by a system of earthworks and batteries, the guns of which should fire *en barbette*.

Having no good survey of the island and no time to have one made before this report would be required, we next proceeded to compile a map from the best data which could be obtained in this city. The result was the sketch herewith inclosed, which is approximately correct, and upon which we have laid down as near as may be the positions, forms, and sizes of the earthworks and batteries by which we propose to occupy the island.

(For sketch alluded to, see manuscript copy of this report.)

We propose to build an inclosed earthwork (at A) on the highest point of the island, which will be the key of the position. The crest of this fort will be held about in the reference of 325 feet.

It is to command by its fire the two redoubts B and C, which it overlooks, and the batteries Nos. 4, 5, 6, and 7, rendering the occupation of these works by an enemy impossible.

Redoubt B will command by its fire batteries 1, 2, and 3.

Redoubt C will have its crest about in the reference of 125 feet, and will flank the only practicable landings on the island on the east and north sides, and command the channel between the island and the Contra Costa shore.

The water batteries from No. 1 to No. 7 will be placed around the island near the shore, in the most advantageous position. Their crests will vary in height from about 60 feet to about 200 feet. The lower of these batteries ought to be armed principally with smooth-bore guns, while the higher ones would receive mostly rifled guns and mortars. They will exclude an enemy from all anchorages within the range of their guns.

The two redoubts A and B, being built to command the adjacent batteries, will be armed principally with smooth-bore field-guns. They might, however, receive with advantage a few heavy sea-coast mortars and perhaps some rifled guns of heavy caliber.

Redoubt C would be armed with ordnance suitable to accomplish the objects which have been indicated—that is to say, the two flanks looking toward the south and southwest with field-guns, while the other three faces would receive heavy guns, principally rifles.

The most suitable position for the wharf is indicated on the sketch. It would be well sheltered from an enemy's guns until he had passed to the eastward of the island.

Such, in general terms, is the manner in which this board thinks the island should be fortified. Doubtless a complete survey of the ground will modify some of the details of the redoubts, as well as of the batteries, but if this method of occupation should be adopted, the principles as herein sketched must remain unchanged.

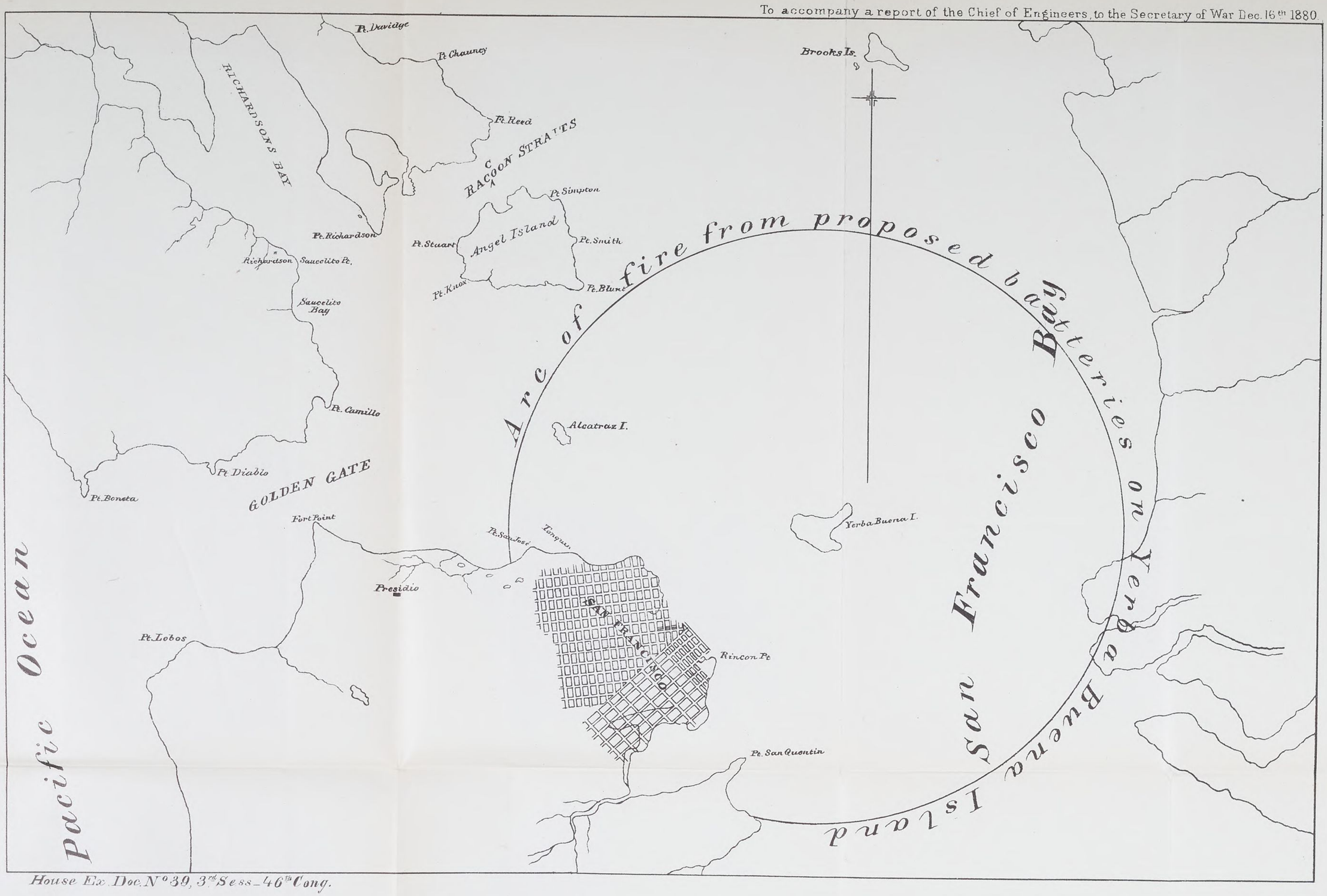
* * * * * * *

Copy of the letter from the Chief of Engineers of the Army, transmitting the above report to the Secretary of War.

HEADQUARTERS CORPS OF ENGINEERS,
Washington, February 4, 1868.

The within copy of the report of the Board of Engineers for the Pacific coast, on the ubject of the use of Yerba Buena Island, harbor of San Francisco, California, dated

To accompany a report of the Chief of Engineers, to the Secretary of War Dec. 16th 1880.



House Ex. Doc. N° 39, 3rd Sess. - 46th Cong.

January, 1868, is respectfully transmitted to the honorable Secretary of War for consideration in connection with my communication of 25th January, 1868, on the same subject.

Without discussing the particulars of the views presented by the board, I deem it sufficient to say now that I agree with the board in its conclusion, that no portion of Yerba Buena Island, or of the adjacent shoals, should be given up (from its military uses) for railroad or commercial purposes.

A. A. HUMPHREYS,
Brigadier-General Engineers, Commanding.

APPENDIX W.

OFFICE OF THE BOARD OF ENGINEERS FOR THE PACIFIC COAST,
San Francisco, Cal., October 14, 1872.

GENERAL: * * * All subsequent discussion and reflection on the subject have only tended to confirm us in the opinion that the whole of Yerba Buena Island should be retained by the government for the defense of the harbor and city of San Francisco.

* * * * * * *

If a portion of this island must be surrendered to railroad purposes, the government will sacrifice a part of the security of the city of San Francisco in time of war to supposed commercial advantages in time of peace.

* * * * * * *

Now, a fort on a hill in close proximity to * * * to such structures becomes nearly indefensible. The very burning of the large establishments and the surrounding structures of a great railroad depot, with their stores, which would present a large target to an enemy, would render the defense impracticable, for the flames, smoke, and sparks from such a fire would render it impossible to serve the guns in its batteries.

* * * * * * *

The island of Yerba Buena derives its great military importance for the defense of San Francisco from its position and its isolation. With such an important defense as it could offer, when surrounded by large commercial establishments, San Francisco could only look for her capture to be deferred by a few hours, or days at most, after an enemy was able to approach within shelling distance of the island. Whereas, if the island be left entirely for military purposes, and be occupied according to the plans which have been submitted, the cities of San Francisco and of Oakland could rest in security even after a hostile fleet had forced an entrance into the harbor, for such a fleet could not even then take up any position within shelling distance of these cities where it would not be reached by powerful guns and mortars either from Alcatraz or Yerba Buena.

In view of these considerations, this board can only reiterate the opinion expressed in its former report on this subject, viz, that no portion of this island or of the adjacent shoal should pass out of the control of the government.

* * * * * * *

That the title to the whole island should forever remain in the United States.

* * * * * * *

Respectfully submitted,

G. H. MENDELL,
Major of Engineers.
C. SEAFORTH STEWART,
Lieut. Col. of Engineers.
B. S. ALEXANDER,
Lieut. Col. Eng'rs, President Board of Engineers Pacific Coast.

Brig. Gen. A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

APPENDIX X.

Copy of report of the Chief Engineer of the Army, on Senate Bill No. 273, to convey to W. P. Rodgers and others the island of Yerba Buena, California.

ENGINEER DEPARTMENT,
May 28, 1866.

Respectfully returned to the War Department. Yerba Buena Island is in the interior of San Francisco Harbor, about opposite Rincon Point. It contains 200 or 300 acres

of land. It was reserved from sale by the President's order in 1850, for military purposes, in compliance with a request made by this department. Its importance as a depot for supplies for the several branches of the Army service cannot be overstated. It should by all means be retained in the possession of the United States.

A board of engineers that studied the defenses of that harbor considered it necessary to locate two batteries on that island, to command the inner roadstead. It is as indispensable for military purposes in that harbor as the islands occupied by the United States in the harbors of New York, Boston, and other places.

This department at the present moment contemplates establishing an engineer depot on that island. If any part of it is disposed of for private uses, the necessity will exist for purchasing elsewhere property for which this island was expressly reserved from sale.

RICH'D DELAFIELD,
Bvt. Major-General and Chief Engineer, U. S. A.

APPENDIX Y.

OFFICE BOARD OF ENGINEERS FOR FORTIFICATIONS,
Army Building, New York, May 24, 1872.

GENERAL: * * * We deem it indispensable for the proper defense of the city and harbor that the island of Yerba Buena should be strongly fortified.

* * * * * * *

Respectfully submitted.

J. G. BARNARD,
Col. and Bvt. Maj. Gen.
GEO. W. CULLUM,
Col. of Engrs. and Bvt. Maj. Gen.
Z. B. TOWER,
Lieut. Col. of Engrs. and Bvt Maj. Gen.
H. G. WRIGHT,
Lieut. Col. of Engrs. and Bvt. Maj. Gen.

Brig. Gen. A. A. HUMPHREYS,
Chief of Engineers, U. S. A., Washington, D. C.

APPENDIX Z.

HEADQUARTERS CORPS OF ENGINEERS,
Washington, D. C., October 17, 1867.

GENERAL: I have the honor to return herewith papers referred to the Chief of Engineers for remark, on the 11th of October, in relation to the application of the Yerba Buena Railroad Company, through its president, S. F. Butterworth, for permission to construct a railroad around the island of Yerba Buena, San Francisco Harbor, California, with the recommendation that General Halleck be authorized and directed to protect the military reservations of the United States within the Bay of San Francisco by all the means available for the purpose.

The reservation by the President of the United States of land for military purposes is supposed to place it beyond all control or interference from any quarter which would render it useless for the intended object, and virtually nullify the action of the President.

The island of Yerba Buena is considered an important position for the defense of the harbor of San Francisco, and the possession of the whole island is necessary for this object.

The Yerba Buena Railroad Company should not be allowed to construct any works whatever on or in front of it.

* * * * * * *

A. A. HUMPHREYS,
Brigadier-General of Engineers, Commanding.

General U. S. GRANT,
Secretary of War ad interim.

APPENDIX ZZ.

UNITED STATES ENGINEER OFFICE,
Galveston, Tex., December 7, 1880.

GENERAL: I have the honor to acknowledge receipt of communication from your office, dated the 1st instant, regarding a bill now pending in Congress, providing for the transfer of the island of Yerba Buena to the city of San Francisco.

In reply to so much of the letter, viz, calling upon me to make an early report of my judgment thereon (by return mail if possible), stating the value of the improvements found by me on the island at the date of my occupation in 1867, for use in making a report on the bill mentioned, I have to respectfully state:

That when I entered upon occupancy of the island, I found there a tenant occupying a small frame building, and engaged in the business of repairing small vessels, such as could be readily hauled out upon some cheap ways there located. I think there was a small workshop in connection with the business. A very small one-story, and I think one room, house, and a shanty or two, occupied a position near the center of the present parade-grounds. The house was made serviceable as a hospital for my command. The shanties were valueless. A well was sunk near by, and probably an acre or two of ground here had at one time been under cultivation; and another well (dry) had been sunk on the higher ground of the island in the center of a field that had evidence of having been broken up for cultivation at one time and abandoned for want of water. To my recollection, it was a small patch of ground, perhaps an acre or two.

There was no fencing on the island, and no stock, save less than six hogs, which I personally became possessed of by the payment of about $40 to the rightful owner.

The little plank walk, supported upon light piles, that occupied about the position of the present wharf, to enable one to reach small boats, I would not dignify with the term wharf.

There was evidence of a wharf-landing at the southeastern end of the island, where a stone-quarry had been worked. Some refuse of the quarry had been thrown in on the shore line; but the area of land added to the island thereby was insignificant.

Had I been asked the question I am endeavoring to answer aside from this connection, I should say the improvements were nothing at the time I took possession; $15,000 would well cover the cost of the buildings, wharf, and ways for hauling vessels out to be repaired, even at California prices.

The improvements made by the government during my occupancy up to 1871 can be readily distinguished apart from the improvements made before, save in the matter of the plank-walk for boat-landing, which was removed, and in the position of the building, which was removed and added to for hospital purposes, and is now believed to be standing.

Very respectfully, your obedient servant,

S. M. MANSFIELD,
Major of Engineers, Brt. Lieut. Col., U. S. A.

To the CHIEF OF ENGINEERS, *U. S. Army,*
Washington, D. C.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 40.

POPULATION AND RESOURCES OF ALASKA.

LETTER

FROM

THE SECRETARY OF THE INTERIOR,

TRANSMITTING

A preliminary report upon the population, industry, and resources of Alaska.

JANUARY 15, 1881.—Referred to the Committee on the Census and ordered to be printed.

DEPARTMENT OF THE INTERIOR,
Washington, January 13, 1881.

SIR: I have the honor to transmit herewith for the information of the House of Representatives a copy of a preliminary report upon the population, industry, and resources of Alaska, by Ivan Petroff, esq., special agent of the census, appointed under the provisions of the eighth section of the act relating to the census, approved April 20, 1880, and the accompanying map of Alaska, together with a copy of the letter of the Superintendent of the Census, dated the 4th instant, forwarding the same to this department, and suggesting that the report be laid before Congress with reference to propositions now pending concerning the district of Alaska.

The information obtained by Mr. Petroff is of great value, much of it being upon matters and concerning regions not previously the subjects of investigation, and I have, therefore, to recommend that the report be printed.

Very respectfully,

C. SCHURZ,
Secretary.

To the SPEAKER
of the House of Representatives.

DEPARTMENT OF THE INTERIOR, CENSUS OFFICE,
Washington, January 4, 1881.

SIR: I have the honor to forward herewith a preliminary report upon the population, industry, and resources of Alaska, by Ivan Petroff, esq., special agent of this office, appointed under the provisions of the eighth section of the act of April 20, 1880.

Mr. Petroff has in the course of the season now closed made a very remarkable expedition through the northwestern parts of Alaska.

The Sitka and Wrangell region still remains to be visited before Mr. Petroff can render a final report, but it has seemed to me that on account of the very high value of the information which Mr. Petroff has obtained, much of it touching matters not previously investigated, or concerning regions not even visited by the officials of the Russian state or of the Russian church, it is desirable that the matter now communicated should be laid before Congress with reference to propositions now pending concerning the district of Alaska.

I have the honor to be, very respectfully, your obedient servant,

FRANCIS A. WALKER,
Superintendent of the Census.

Hon. C. SCHURZ,
Secretary of the Interior.

SKETCH MAP
— OF —
ALASKA
SHOWING THE LOCATION OF
SETTLEMENTS, ROUTES OF TRAVEL, DISTANCES ETC.

To accompany the report of

IVAN PETROFF,

SPECIAL AGENT OF THE 10th CENSUS,

FOR ALASKA

1881

180°
170°
160°
150°
140°
130°
70°
60°
PT BARROW
Koknallit
Octlwuk
Pinoshuragin
Nuuka-pyamute
Ostkaionusk
ICY CAPE
Oloh-Kot
Kay-aleet
Kk Hlaimute
Pt Lay
C Lisburne
Tikirak
Ip-not
An-ijakh
Nuataqamute
KOTZEBUE SOUND
Sheshaleqamute
Kowagamute
Selawigamute
Kiwungagamute
Diomedes I
Ingalik
C Prince of Wales
Cape York
Singegamute
Siniogamute
Kivigamute
Nukvrakhkhagamute
Kings I
Sledge Id
Ogoonikhkhagamute
Ingulik
NORTON SOUND
St Lawrence Island
Stewarts
Kotzebuevillle
Pastolaikh
Komarovsky
Elisieev
Makeyevsk
Koznirovsky
Ashkamute
Pogoreshnoi
Kozgmute
Mt KUSILVAK
Chageliuk
Anvik
Tenakhotkhaiak
Lovka
Mchatnotutz
Nulato
Kaltag
Koserevsky
Ikogmute
Kolmakovsky
Nogolmute
Yukon River
Gens de Large
Fort Yukon
Ramparts Village
Kandiek R
Tukuderton R
Charley's people
Tukuderton R
Fetsuttlin
Station
Fort Reliance
Teklanika R
Terrenlievt
Big Mountain
Nettlatin
Nowikakat
Vunlajievet
Tennanah River
Tatsuk R
Tatlit
Redoute Mt
Mt Lyamna
Mt St Elias
Kenai Peninsula
Prince William Sound
Chilcat
Chilkat
Yakutat Bay
Yakutat Bay
Kodiak I
Tukoo
Wrangel
Sitka
Bering Sea
St Paul
St George
Attoo I
Semidi Is
Sanak I
Unimak I
Unalaska
Amaknak I
Oonalaska
Ounalashka
Makushin
Ounimak I
Ounimak Pass
Alaska Peninsula
Kuiukuk
Togiak
Nushagak
Igagik
Ugashik
Kamishkh
Pedgeit
Nushagak Bay
Kvichak River
Kvichak
Nushagak River
Kuskokwim Bay
Kuskokwim River
Kolmakovsky
Kolmakovskoi
Kaltag
Nulato
Koserevsky
Ikogmute
Mchatnotutz
Tenakhotkhaiak
Lovka
Chageliuk
Anvik
Ikogmute
Mekeyevsk
Koznirovsky
Ashkamute
Pogoreshnoi
Kozgmute
Mt KUSILVAK
Nanvirgak
Nanvirgamute
Kashkanak
Nasalgimute
Kasigamute
Stag
Nanvirak I
Kinigagamute
Kinigagamute
Diomede I
Ingalik
Cape York
Singegamute
Siniogamute
Kivigamute
Nukvrakhkhagamute
Kings I
Sledge Id
Ogoonikhkhagamute
Ingulik
NORTON SOUND
St Lawrence Island
Stewarts
Kotzebuevillle
Pastolaikh
Komarovsky
Elisieev
Makeyevsk
Koznirovsky
Ashkamute
Pogoreshnoi
Kozgmute
Mt KUSILVAK
Chageliuk
Anvik
Tenakhotkhaiak
Lovka
Mchatnotutz
Nulato
Kaltag
Koserevsky
Ikogmute
Kolmakovsky
Nogolmute
Yukon River
Gens de Large
Fort Yukon
Ramparts Village
Kandiek R
Tukuderton R
Charley's people
Tukuderton R
Fetsuttlin
Station
Fort Reliance
Teklanika R
Terrenlievt
Big Mountain
Nettlatin
Nowikakat
Vunlajievet
Tennanah River
Tatsuk R
Tatlit
Redoute Mt
Mt Lyamna
Mt St Elias
Kenai Peninsula
Prince William Sound
Chilcat
Chilkat
Yakutat Bay
Yakutat Bay
Kodiak I
Tukoo
Wrangel
Sitka
Bering Sea
St Paul
St George
Attoo I
Semidi Is
Sanak I
Unimak I
Unalaska
Amaknak I
Oonalaska
Ounalashka
Makushin
Ounimak I
Ounimak Pass
Alaska Peninsula
Kuiukuk
Togiak
Nushagak
Igagik
Ugashik
Kamishkh
Pedgeit
Nushagak Bay
Kvichak River
Kvichak
Nushagak River
Kuskokwim Bay
Kuskokwim River
Port Moller
Shumagin Is
Mitrofania
Unga I
Semidi Is
Sanak I
Unimak I
Unalaska
Amaknak I
Oonalaska
Ounalashka
Makushin
Ounimak I
Ounimak Pass
Attoo I

LETTER OF TRANSMITTAL.

WASHINGTON, D. C., *December* 28, 1880.

General FRANCIS A. WALKER,
Superintendent of the Census.

SIR: In obedience to your instructions of the 20th of April, 1880, under which I am directed to ascertain and report as far as possible the number of inhabitants of each geographical and ecclesiastical division of the Alaskan districts, with the distinctions of race, color, country of birth, with an account of the occupations, mode of subsistence of the people, their dietary, dress, &c., indicating the proportional consumption of domestic and imported articles; their religious and educational institutions, with all statistical information relating thereto which is available, together with such matters of economic and social importance as should seem to me to fall within the scope of my labors, I have the honor to report that in compliance with these instructions I have, during the past season, succeeded in making a very careful, and, I trust, authoritative enumeration of the people of all Western Alaska, together with the facts and statistics bearing directly upon their condition, and the volume of trade in that region. Of the southeastern, or "thirty-mile strip" of Alaska, in which the great bulk of the "Indians" proper reside, and where the towns of Sitka and Wrangell are located in close juxtaposition, containing, as they do, the major portion of the white people of that Territory, I am unable to present to you in this report of progress an authoritative statement in response to your letter of instructions. The reason for this, in brief, is due to the fact that the assistant agent designated for this service in the Sitkan district, failed to render timely recognition of his appointment, or to send in to the Census Bureau a single figure or line bearing upon the subject in season for this report. Of this omission, or dereliction, as the case may be, I naturally was ignorant until my return from Alaska and reporting at your office. The season now being so far advanced, and the necessity of my remaining here long enough to properly collate and arrange my field notes, make it impracticable for me to proceed to Sitka and there finish this work before the expiration of this year.

Therefore, in accordance with your kind suggestion that I should prepare, for the use of your office and for the instruction of the public, a report of progress, I will undertake in this writing to give a succinct and connected account of the people of Alaska and their condition as viewed by myself, and from information which I have necessarily been obliged to rely upon in regard to the remote and far distant tribes. In order that I may present the facts and ideas which I possess the more clearly and intelligently to you, I have arranged my notes under several heads or chapters, as follows:

First. The country of Alaska.
Second. The Alaskan people, and their numbers.
Third. The trade and resources of Alaska.

I have the honor to be, very respectfully, your obedient servant,

IVAN PETROFF,
Special Agent.

CHAPTER I.

I.—THE ALASKAN COUNTRY.

The Territory of Alaska, so called, embracing as it does an area nearly equal to one-sixth of the whole United States and Territories, is a region to which the attention of the American people was very suddenly and earnestly directed in the summer of 1867, when it was secured as a measure of diplomacy and good will between the American and Russian Governments. The Russians, who occupied the land with an eye primarily to the fur trade and its dependencies, retired from that country, leaving us a generally correct map of the vast extent of rugged coast, locating its people in a measure correctly, with some facts and figures bearing upon the resources, natural history, and trade, which have since been found to be quite accurate, but which at the time of the transfer were so clouded and distorted by the rival advocates of the purchase and its opponents that the real truth in regard to the subject could scarcely be observed. Since our acquisition of this new land much activity and much enterprise on the part of our people have been manifested in the way of the development of the fur trade, the prospecting of mountain ranges and valleys for gold, silver, and other precious minerals, the labor of cod-fishing, and the scrutiny of other resources supposed to exist in the form of coal and timber.

When we took possession of Alaska a great many active and ambitious men on the Pacific coast were imbued with the idea that much that was really valuable in Alaska in the line of furs and the precious metals would be developed to their great gain and benefit if they gave the subject the attention which it deserved. Accordingly, many expeditions were fitted out at San Francisco, Puget Sound, and other points on the Pacific coast, and directed to an examination of these reputed sources of wealth in that distant country. Twelve years have rolled by, and in that time we have been enabled to judge pretty accurately of the relative value of this new Territory in contradistinction with that of our immediate possessions. We now know that the fur trade of Alaska is all, and even more than it was reputed to be by the Russians.

The most notable instance, perhaps, in this connection, of the great value of these interests may be cited in the case of the Seal Islands. It will be remembered that at the time of the transfer, when the most eloquent advocates of the purchase were exhausting the fertility of their brains in drumming up and securing every possible argument in favor of the purchase, that though the fur trade of the mainland, the sea-otter fisheries, and possible extent of trade in walrus oil and ivory, was dwelt upon with great emphasis, these fur-seal islands did not receive even a passing notice from their hands as a source of revenue or value to the public. Yet it has transpired since the government has been wise enough to follow out the general policy of protecting the seal life which the Russians inaugurated on the Pribylov Islands, that these interests in our hands are to-day so managed and directed that they pay into the Treasury of the United States a sum not alone sufficient to meet all the expenses of the government in behalf of Alaska, but a large excess is left in the Treasury of the United States every year.

But when we come to speak of the other resources, such as the adaptation of the country for settlement by any considerable number of our people as agriculturists or husbandmen, or its actual value as a means of supplying gold and silver, coal or timber, we have to say that as yet no remarkable mines have been discovered, nor have there been any veins of coal worked that would in themselves sustain any considerable number of our people or give rise to any volume of trade.

The timber of Alaska in itself extends over a much larger area of that country than a great many surmise. It clothes the steep hills and mountain sides, and chokes up the valleys of the Alexander Archipelago and the contiguous mainland; it stretches still more scant, but abundant, along that inhospitable reach of territory which extends from the head of Cross Sound to the Kenai Peninsula; where, reaching down to the westward and southwestward as far as the eastern half of Kadiak Island, and thence across Shelikhov Straits, it is found on the mainland, and the peninsula bordering on the same latitude; it is confined to the interior opposite Kadiak, not coming down to the coast as far eastward as Cape Douglass. Here, however, it impinges on the coast of Cook's Inlet, reaching down to the shores and extending around to the Kenai Peninsula. From the interior of the peninsula above referred to, the timber line over the whole of the interior of the great area of Alaska will be found to traverse the coast line, varying in distances of 50 to 150 miles from the seaboard until we reach that section of Alaska north of the Yukon mouth, where a portion of the coast of Norton Sound is directly bordered by it as far north as Cape Denbigh. From this point to the eastward and northeastward, a line may be drawn just above the Yukon and its immediate tributaries of the northern limit of timber to any considerable extent. There are a number of small water courses rising here that find their way into the Arctic, bordered by hills and lowland ridges on which some wind-stunted timber is found, even to the shores of the Arctic Sea.

In thus broadly sketching the distribution of timber over Alaska, it will be observed that the area thus clothed is very great; yet, when we come to consider the quality of the timber itself, and its economic value in our markets, we are obliged to adopt the standard of the lumber mills in Oregon and Washington Territory. Viewed from that light, we find that the best timber of Alaska is the yellow cedar, which in itself is of great intrinsic value; but this cedar is not the dominant timber by any means; it is the exception to the rule. The great bulk of Alaskan timber is the form known as Sitkan spruce, or balsam fir. The lumber sawed from this stock is naturally not of the first quality.

The fisheries, which I shall speak of hereafter, as also of the fur trade, cover a very large area. Their value and importance, in consequence of the limited market afforded for exportation on the Pacific coast, has not been fully developed. The supply certainly is more than equal to any demand.

The soil of Alaska is not sterile. It exists at many points in that region of the requisite depth and fertility required for the production of the very best crops of cereals and tubers. The difficulty with agricultural progress in Alaska is therefore not found in that respect; it is due to the peculiar climate.

Glancing at the map, the observer will notice that hydrographers have defined the passage of a warm current, sufficient in volume and high enough in temperature to traverse the vast expanse of the North Pacific from the coast of Japan up and across a little to the southward of the Aleutian Islands, and then deflecting down to the mouth of the Columbia

River, where it turns, one branch going north up along the coast of British Columbia by Sitka, and thence again to the westward until it turns and bends back upon itself. The other grand arm continues from the first point of bifurcation, in its quiet, steady flow to the Arctic, passes up to the northeastward through the strait of Bering. This warm current, stored with tropical heat, gives rise naturally, as it comes in contact with the colder water and air of the north, to excessive humidity which takes form in the prevalent fog, sleet, and rain of Alaska, as noted and recorded with so much surprise by travelers and those unaccustomed to it. Therefore at Sitka, and, indeed, on the entire seaboard of South Alaska and the Aleutian Islands, instead of finding a degree of excessive cold which the latitude would seem to indicate, as it does, carried over to the mainland, across the coast range, we find a climate much more mild than rigorous; but the prevalence of fog clouds or banks either hanging surcharged with moisture or else dissolving into weeks of consecutive rain so retard and so arrest a proper ripening of fruits and of vegetables in that climate that the reasonable certainty of success in a garden from year to year is destroyed.

When we look at Alaska we are impressed by one salient feature, and that is the remarkable distances which exist between the isolated settlements. It is not at first apparent, but it grows on the traveler until he is profoundly moved at the expenditure of physical labor, patience, and skill required to traverse any considerable distance of that country.

In order to give a comprehensive view of the land as it lies, we must speak of the country under the head of four great divisions: the Sitkan or southeastern extremity, comprising the 30-mile strip and the Alexander Archipelago; the Aleutian or Peninsula district, comprising the Aleutian chain of islands, together with the Peninsula and Kadiak with its numerous contiguous islets; the Yukon district, which embraces all that country from Norton Sound to Bristol Bay, reaching back as far as Nulato on the great river bearing the name of this district, and the Kolmakovsky Redoute on the Kuskokvim River; and last, the Great Interior, which includes all that portion lying north of Cook's Inlet to the Arctic, and returning east and west from our boundary line with British America and the Nulato and Kolmakov points above referred to.

The Sitkan district is essentially one of rugged inequality; it is mountainous on the mainland to the exclusion of all other features. It is equally so on the islands. It is literally set up on end; it is traversed here, there, and everywhere by broad arms of the sea and their hundreds and thousands of lesser and tiny channels.

Land travel there is simply impracticable. Nobody goes on a road; savages and whites all travel by the water. Here perhaps the greatest humidity and the heaviest rainfall occurs in the Alaskan country. The equable and not rigorous climate there permits of free navigation at all seasons of the year. It is seldom indeed that the little lakes and shallow lagoons near the sea level there are frozen so firmly as to allow of a winter's skating.

The Aleutian and Peninsular district is in its turn quite as peculiar to itself, as much individualized by its geological age and formation as is that of the Sitkan division. It holds within its boundary a range of great fire mountains—grumbling, smoking, quaking hills; some of these volcanic peaks so lofty and so impressive as to fix in the explorer's eye an image superb and grand, and so attractive as to render adequate description quite impossible. Like the Sitkan district, the Aleutian and Peninsular region is exceedingly mountainous, there being also very little low or level land compared with the sum total of its

superficial area; but that portion of it extending for 1,100 miles to the westward of Kadiak, nearly over to Asia, being bare of timber, a skeleton, as it were, is presented to the eye and strikes us with a sense of its own individuality in decided contrast with that of the Sitkan country.

These hills, not clothed with timber, are covered to their summits in most cases with a thick crop of circumpolar sphagnum interspersed with grasses, and a large flora, bright and beautiful in the summer season. To thoroughly appreciate, on an occasional bright and pleasant day in this country, how much moisture in the form of fog and rain settles upon the land, no one can do better than to leave the ship in the harbor, or the post where he is stationed, and take a line of march up through one of the narrow valleys near by to the summits of some of the lofty hills. He will step upon what appeared from the window, or the vessel, mere firm greensward, and stepping on it sink to his waist in a quaking, tremulous bog, or he will slide over moss-grown shingle, painted and concealed by the luxuriant growth of cryptogamic life, where he expected to find a free and ready path.

Passing from this district, we are brought into the contemplation of the very remarkable region which we have called the Yukon division. The writer has, during the past summer, traversed the major portion of it—from the north to the south—and he has confirmed many new and otherwise mooted points. Here is a region covering the deltoid mouth of a vast river—the Yukon; the sea-like estuary—the Amazonian mouth of another—the Kuskokvim; and the extraordinary shoals and bars of Bristol Bay, where the tides run with surprising volume. The country itself differs strikingly from the two divisions we have just sketched, consisting, as it does, of irregular mountain spurs, which are planted on vast expanses of low, flat tundra. It is a country which, to our race perhaps, is far more inhospitable than either the Sitkan or Peninsular divisions, yet, strange to say, the writer has found the greatest concentrated population of the whole territory therein. Of course it is not by agricultural, or by mining, or any other industry, save the aboriginal art of fishing and the traffic of the fur trade, that they live; and then, again, when the fur-bearing animals are taken into account, the quality and the volume of that trade is far inferior to either of these previously-named divisions, and we find them existing in the greatest number where they have the least to gain, according to our measure of compensation, were we obliged to live in their places as Alaskans.

This country, when you leave these detached mountain regions and spurs, is a great expanse of bog, little lakes, and larger ones, thousands of channels between them, sluggish currents filled with grasses and other aquacous vegetation, but indicated to the eye by the presence of water-lilies.

The traveler, tortured by musquitoes in summer—blinded, confused, and disturbed by whirling "purgas," snow, and sleet in winter—the coast rendered almost inaccessible by the vast system of shoaling, which the current of the great Yukon has effected during past time, as it is doing now—passes to the interior—the superficial area of which comprises nearly five-sixths of the landed surface of the Territory.

Here is an immense tract reaching from Bering Straits in a succession of rolling ice-bound moors and low mountain ranges, for 700 miles an unbroken waste, to the boundary line between us and British America. Then, again, from the crests at the head of Cook's Inlet and the flanks of Mount Saint Elias northward over that vast area of rugged mountain and lonely moor to the east—nearly 800 miles—is a great ex-

panse of country, over and through which not much intelligent exploration has been undertaken. A few traders have gone up the Tananah, over the old established track of the Yukon. A few traders have passed to the shores of the Kotzebue Sound overland from the Koyukuk. Dog-sled journeys have been made by these same people among the natives of the Kuskokvim, and the coast between Bristol Bay and Norton Sound. But the trader as he travels sees nothing, remembers nothing, but his trade. With rare exceptions he is incapable of giving any definite information beyond the single item of his losses or his gains through the regions he may traverse. We do know, however, enough to say now, without much hesitation, that this great body, this great extent, which we call the interior, is by its position barred out from its occupation and settlement by our own people. The climatic conditions are such that its immense area will remain undisturbed in the possession of its savage occupants—man and beast.

The subject of the agricultural resources of the country will, however, form the topic of another chapter in this report.

It thus becomes apparent that we possess in Alaska an immense area of land and sea which, during the last twelve years of our occupation, has impressed our people with one very truthful idea, and that is that though, as far as we know, it does not invite emigration from our more favored States and Territories, yet there is about it, still stored up in the recesses of its lonely coast and deep interior, resources of economic value which may prove of great value to our people.

II.—THE PEOPLE OF ALASKA.

In taking notice of the inhabitants of the Territory we find that they are scattered in isolated villages and scanty settlements over the entire reach of its extensive seaboard. They are living, with the exception of the Aleuts and the Kadiaks, in a purely aboriginal state, as much so to-day as they were when first noted and commented upon by the old employés of the Russian American Company, the English navigators like Cook, Portlock, and Dixon, and as set forth by writers who had served on the coast under the auspices of the old Hudson Bay Company.

The attempt to convert to Christianity the Eskimos and Indians of the north, as well as the Koloshians of the south, was never successful, or even partially so. These nomadic tribes of roving, unsettled Indians of savage life could not be subverted by the priests in days, months, or years; but the people of the Aleutian Islands and those of Kadiak and contiguous islands were subdued first by the hand of power, and with their subjection became speedily harmonious, and, to all outward forms and ceremonies, perfectly converted Christians.

In viewing the natives, therefore, of Alaska, while we find them divided into two sections, as it were, of Christians and aborigines, yet when we come to enumerate their numbers and to describe them as they live, we find the following distinctly defined tribes or tribal relations—races of people, in fact:

First. The Innuit or Eskimo race, which predominates in numbers and covers the littoral margin of all Alaska, from the British boundary on the Arctic to Norton Sound, the Lower Yukon and Kuskokvim, Bristol Bay, the Alaska Peninsula, Kadiak Island, mixing in, also, at Prince William Sound.

Second. The Indians proper, spread over the vast interior in the north, reaching down to the seaboard at Cook's Inlet and the mouth of Copper River, and lining the coast from Mount Saint Elias southward to the boundary and peopling Alexander Archipelago.

Third. In numbers, but first in importance, the Aleutian race, extending from the Shumagin Islands westward to Attoo—the ultima Thule of this country.

Of these people we naturally turn to the Aleutians first, because, as we have stated at the outset, they are the Christian inhabitants of the Territory. They are living in fixed places of abode, in little villages; they conform to all the outward signs and practices of civilization, with rare exceptions.

These people when first surprised and located by the Russians were living then as they are living now, on the great Aleutian chain of islands, a few of them scattered up the Alaskan Peninsula as far as Port Moller on the north shore and the Shumagin Islands on the southern coast. When first surprised they were living to all intents and purposes as savages. They so impressed the Russians.

They were living then in far greater numbers, if we can believe the records and the legends of the Russians, and themselves, populating their country to the extent perhaps of 20,000 or 25,000, yet in the light of the present, with due regard to the old and abandoned places of residence, the ruined barrabaras or subterranean dwellings, and the ruined communal dwellings, or "oolagahamah" houses, leads the mind of the inquirer to doubt very strongly whether they ever at any time in the history of this race exceeded in numbers a population of 10,000 souls.

The record is quite full and bitter which the Russians made as they possessed themselves of the lands. They themselves in many instances cried aloud against the course of their own countrymen; but the subjection of the Aleutian race and its complete subserviency to their conquerors speedily became a matter of fact. To-day the observer, as he views an Aleutian village, finds it difficult to associate in his mind the idea of the people before him ever having been a warlike, ferocious race, though he can discern evidences of hardihood, patience, and much acumen, when he comes to study the characteristics of the leading men among them.

It must not be inferred from the foregoing that the Aleutians made a desperate, stubborn, or bloody resistance to the Promyshleniks; they did not. The first organized and warlike struggle which occurred took place at Oonalashka and Oomnak, and this not arising until gross abuses and ill usage from the hands of the Russians spurred them to war.

We will not dwell in detail upon the characteristics of their lives when first discovered as savages. It has to a measure already been well described and set forth by the eloquent and conscientious labors of Bishop Innokentius.* This we will translate and append when the final report shall be presented. We have now to describe them as we have seen them this past season, and we shall proceed first to sketch the salient features of these interesting people and then consider them by settlements as they exist.

The average Aleut is not a large man; he is rather below our medium standard—say 5 feet 5 or 6 inches. There are exceptions to this rule both ways, some going as high as 6 feet and some dwarfs. The women in turn are proportionately smaller. The Aleut wears the expression which we note and ascribe to the Mongolian race—to the Japanese, perhaps, more particularly. The hair is long, coarse, and black; the beard

* Veniaminov.

is scanty; the face broad; the cheek bones high and very prominent; the nose is insignificant, flattened; the eyes are black and small, set wide in the head, under faintly-marked eyebrows—just a suggestion of obliquity, and that is all; the lips are full; the mouth large, and the lower jaw square and prominent; the ears are small, and the skin a light yellowish brown. In youth sometimes fair, with a faint blush in the cheeks, but with age becomes seamed with wrinkling and decidedly leathery. They have full, even sets of teeth; they are, as might be inferred from their constant habituation to the bidarka, or "kayak" in our vernacular, very well developed in the chest and arms, but sprung at the knees, and slightly unsteady in walk. Their hands and feet are small and well formed, some of them exceedingly so. While the women when young can scarcely be called handsome, the best of them, yet they are very far from being hideous or repulsive. They partake, slightly softened down, of the same characteristics which we have sketched in the faces and forms of the men. The Aleuts are in disposition amiable, docile, law-abiding, and respectful people; they are living, in the ten or fifteen settlements which we shall enumerate, as Christians to all outward signs and exercises. They hunt and depend upon the skin of the sea-otter as their staple commodity to barter with traders for a few of their necessaries and all their little luxuries in life. There is nothing else in the line of fur-bearing animals or other economic treasure that they can secure in their own country, save a few red and cross foxes; the blue fox is found on the western islands, especially Attoo and Atkha.

As they live to-day, they are married and sustain the relation of husband and wife, with families, more or less; each family, as a rule, living in its own hut, or barrabara. They have long, long ceased to dress themselves in skins and their curious primitive garments made from the intestines of sea-going animals, save at one or two points where extreme poverty still compels them to wear bird-skin garments and other patterns handed down from ancestral times. The visitor to most any one of these Aleutian towns will find its people dressed in our store-clothes, and on Sundays will notice a great many suits of tolerably good broadcloth; the women in silks occasionally, but more often and generally in gowns of cotton fabrics made up with special reference to the "mode," for they have a keen eye to the cut and style of San Francisco fashion-plates. Although in their hunting excursions, and a great part of their time when about the village, they still wear the ancient "kamleyka," or water-proof garments, made from the intestines of marine mammalia, and also torbassa, or boots, made in the same manner and soled with the tough flippers of the sea-lion, yet they all dress up on Sundays and on the holidays of their Church in San Francisco calf-skin boots and ladies' kids and slippers. On account of the prevalence of high winds, instead of using our conventional and aristocratic "beaver," they affect caps. One peculiar weakness among the males is to get a red ribbon, or something of the kind, around it, suggested, no doubt, by the gay appearance of the Russian army cap in times gone by, when the officers of the old company used to appear among them in full regalia. The males dress soberly, very little attention being given to display or color or ornamentation, as is the custom of semi-civilized people, though they lavish some care and skill in the ornamentation of their water-poof garments used in the chase of the sea-otter and kindred occupations, the seams of the kamleykas, skin boots, and other water-proof covers, including those of their bidarka, being frequently embellished with tasty tufts of gaily-colored sea-bird feathers and lines of goose-quill embroidery.

The women naturally desire bright ribbons and all the cheap jewelry

which the traders spread before them. Their means only limit them in decking their persons with all these little gewgaws of this kind, which the traders carry up there for that purpose. They dress the hair in braids, as a rule, and tied up behind. They seldom wear bonnets or hats; as they go from house to house, or to church, they have handkerchiefs, principally of cotton—in many cases of silk—tied over their heads. When they go from house to house to gossip, or on little errands, a shawl is usually thrown over the head and held with one hand together, under the woman's chin. As we have said before, they dress principally in cotton fabrics, with skirts, overskirts, cotton stockings, &c.

The domestic life of an Aleutian family typifies the life of this whole people, for they are in fact living with but one idea mainly, and as one lives they all live. The barrabara, or house of the Aleut, is half under ground, or in other words it is an excavation on the village site of a piece of earth 10 or 12 feet square to a foundation 3 to 4 feet below the surface. Some of these houses are very much larger, having two or three rooms on a floor. This earth as it is excavated is laid back and upon a wooden frame and lining built within and above the excavation, forming a wall of sod and earth 2 and 3 feet or more in thickness. The native architect enters this dwelling through a little hall at the outside and to the leeward from the prevalent winds which may occur in the locality. The door is low, and this corridor or hall itself joins on to the structure which we have just described, just as a storm-door is placed upon one of our approaches, only, of course, rather rude and careless in its shape. The floor of the house is either covered with boards which the hunter has secured from the trader, or, if the man is a very poor or unsuccessful hunter or thriftless specimen, it is simply earth trodden down. The natives to-day use for fire, as a rule, the old Russian "petchka," or they have a diminutive cast-iron stove, such as we use ourselves, lately introduced. The latest addition to the hardware of the Territory is a small but neat wrought-iron cooking-range, made wholly with an eye to service in that isolated region. Of course the larder of the family is never very extensive or varied. The barrabara is usually divided into two rooms, not wholly shut out one from the other, but a partition either of timber or hanging curtains which conceal the bed-room—if it may be so called—from the cooking-room. They are fond of comfortable beds, having adopted the feather beds of the Russians.

Soap being an expensive article, the native housewife naturally economizes in the laundry, and though she may very much desire to spread over this luxurious couch the counterpane and fluted pillow-shams of our civilization, yet with rare exceptions these are missing, though colored spreads made especially for that trade, are almost always on these beds. The furniture in this hut usually consists of one table, store-boxes, and rude benches for seats; the beds themselves being placed upon a frame of their own manufacture and well raised above the floor, sometimes with curtains around them—again a practice undoubtedly borrowed from the Russians.

The table ware and household utensils do not require a large cupboard for their reception. A species of large, flowered, white crockery cups, saucers, plates, &c., pewter spoons, and some imitation or sham silver ware, will be found in sufficient quantity for the use of the family and its neighbors during occasions of festivities. They evince a strange antipathy to any and all species of tinware—probably due to the fact that it is necessary to keep them clean or they rust out. The latest desideratum of the Aleutian housewife is our own recent agate or granite ware. They have come into the general use of coal oil for purposes

of illumination; the glass lamps and odor suggestive of that article can be plainly detected by any stranger who goes into the village for the first time, in spite of the strange fishy and other indigenous odors, which are in themselves as odious as they are penetrating. Occasionally, however, an old stone lamp, with a strip of cotton wick or moss, will be used in some emergency.

These people are very fond of pictures, and whenever they can get them they take great pleasure in pasting or otherwise fastening them to the walls of the barrabaras. The Russians early took cognizance of this trait, and the priests made good use of it by distributing to the eager hands of their new converts the richly colored and striking pictures of the church saints.

The barrabara built in the above manner and occupied by the Aleut, his wife and children, and a relative or two, perhaps, is a warm and thoroughly comfortable shelter to him as long as he keeps it in good repair. It is true that the air within is close, and that in case of sickness it is even foul; yet, on the whole, the Aleut may be safely said to have a house in which he can live with comfort to himself and his family. He never stores up much food against the morrow. He does not keep it in a cellar; it is usually found that the surplus stock of fish, fowl, or meat that he may have is hung up outside of his door, on a wooden frame, or "*labasa*," out of the reach of dogs, where it is secure, inasmuch as he lives in no dread of theft from the hands of his neighbors. He subsists principally upon fish—cod, halibut, salmon, trout, and the like—which he takes the year round as they are in season and succeed each other. He varies this diet with tea, sugar, and hard bread or flour, and some other little articles in the grocery line, perhaps canned meats, fruits, or vegetables, which he purchases at the trader's store. They prefer the hard bread, or sea biscuit, not because it is better to their palates than flour made up and baked into bread, but on account of a difficulty in securing fuel for baking. Among the luxuries which nature provides for them, the chief article is the sea-urchin or echinoderm, and the eggs and the flesh of the various species of sea-fowl peculiar to the waters of the Aleutian Archipelago. These people, when they rely upon their own resources for fuel, are compelled to make tedious journeys along the coast for drift-wood, which is found here and there in scant quantity; or else the women repair to spots on the mountain sides where the growth of the *empetrum nigrum* is thickest, and where the slender strawberry-like runners of this plant have grown and intergrown in thick masses, so that they pull them up from the earth as we would gather dried grasses. Large bundles are made up of this "chicksha" by the women, under which they stagger back to the village. This material is air dried, or weathered rather, for a few weeks or months, and then it is used in the peculiar Russian stove, or oven, by igniting a wisp or two at a time and closing the door on it. A hot fire is made, the heat absorbed by the thick walls of the "petchka," and the small apartment within the barrabara's earthen sides is kept at a tropical heat for many hours without renewal of the fire. Latterly, however, and to day at many of central points, natives are buying cord-wood of the traders, and coal imported from San Francisco, the former being brought over from Kadiak.

The family live here; children come and grow up, marry, branch out into houses of their own, of the same character as they show themselves capable of living by their own exertions as hunters and fishermen, or they inherit the paternal roof. In a normal condition the Aleutian is a peaceful, affectionate, though undemonstrative, parent, and a kind

husband, or at least he imposes no burden upon his wife that he does not fully share in kind. The children grow up not subjected to severe or harsh discipline; nor are they the recipents of excessive attention. The life of the family when the hunter is at home is a very quiet routine; the topics of conversation are very few, and, save the ordinary rising and retiring of the family, and the cooking at irregular hours of their daily meals, nothing occurs beyond the exercise of fast or feast days of the church, or some "name's day" in their own family, to vary its monotony, day in and week out; but, when they meet in their houses or their neighbor's, on the occasion of festivity as suggested, their tongues are loosened and the conversation between them, the old men and women in especial, is active and incessant. Latterly these occasions of enjoyment and religious convocation in many instances have been turned into orgies and disreputable carnivals by overindulgence of the people in home-brewed beer, or kvass. It is said, upon good authority, that the brewing of this liquor was taught to these people by the earliest Russian arrivals in their country, who made it as an anti-scorbutic, and it certainly has not proved to be to these people a blessing in disguise. The abuse of it has brought upon them nearly all the misery that they are capable of understanding or conceiving. As this beverage is a peculiarly Alaskian intoxicant, it is perhaps not superfluous to give a slight history of its manufacture and the consequences of its abuse.

The Russian kvass, as made at home, is a pure malt liquor, without the addition of hops—a cooling and slightly acid drink. The Promyshleniks were obliged, in default of the regular ingredients, to use rye-meal; this was mixed in casks with water in right proportions, and allowed to remain and ferment in the cask until it was soured and lively enough to draw. Latterly, however, the natives have been enabled to use sugar, especially that strong and potent Sandwich Island brand; this gives the kvass, as made by the Aleutians to-day, a highly alcoholic power. They take the sugar, with a larger proportion of flour, put it into a barrel or cask with a few handfuls of dried apples or rice—hops, if they can get them—bung up the barrel, and allow fermentation to go on. They seldom wait for it to work entirely clear, but usually draw it when it is thick and very sour. This is the root of all evil among these people; its abuse gives rise, nine times out of ten, to the disturbances among them; it transforms the quiet husband into a howling brute; he becomes fired to a state of mind bordering on frenzy, drives his wife, flying for her life, screaming, from the hut, and the children hiding like little chickens in the grass. Yet, it is a significant fact that, with all these savage demonstrations, pulling of hair and beating in these drunken rows, there is no record of any man's life being actually taken or even serious bodily injury occurring to the drunken disputants; but wives are beaten shamefully, and the native's house is desolate for weeks and for months as the result of these orgies; his health is shattered by repeated excesses of this kind; he rapidly deteriorates as a hunter, and he suffers just as keenly with his family all the pangs of poverty as can any of our own people.

Mention has been made of the fact that in every one of these Aleutian settlements a church or chapel will be found, no matter how poor or isolated these little communities may be. The Greek Catholic Church, which is the established religion adopted and preferred to-day by these people, to the exclusion of all other sects, bears this relation to them. The Greek Catholic bishop of the diocese of Alaska, who resides in San Francisco and directs the conduct of affairs of all Alaska from that point, is empowered by his home church in Russia to sustain and support

certain churches among them at his own expense. He is supplied with money for the purpose, and he expends it in maintaining what he calls parish churches. Two of these parish churches out of seven belonging to his diocese of Alaska are located in Aleutian villages, namely, Oonalashka and Belkovsky. The natives at other points hereinafter enumerated, including the Seal Islands, have built for themselves, at their own expense, and sustain also in the same manner, chapels or little churches in which they worship, and many of the forms of the Greek Catholic Church are religiously observed throughout the year by them. They are, of course, unable in these outlying, far-distant settlements to secure and pay for the services of a regularly-ordained priest, so that the parish priest at Oonalashka, for instance, or Belkovsky, makes a tour of his parish once every year at least, by which the higher ceremonies of the church, such as the offices of baptism, marriage, &c., are dispensed to the people who crave them. The piety of the Aleutian people is very pronounced as far as outward signs and professions go; they greet you with a blessing and a prayer for your health; they part from you murmuring a benediction; they never sit down to the table without invoking the blessing of God upon them, and in a great many other respects, down to trifling details too numerous to mention, they carry the precepts and phraseology of the church upon their lips incessantly. In this way, strange as it may seem, a large number of these people have learned to read and write in the Russian and some of them in the Aleutian language, for the services of the church are conducted in both languages. An Aleutian grammar and alphabet adapted to the phonetic power of the Russian tongue is used in all these churches, and the exercises thereof are generally conducted in both languages. The young men and boys are taught, as they grow up, by their parents, especially those who have some connection with the church either as a deacon or preacher or something, to read first in the Aleutian and then promoted to an understanding of the Russian. This Aleutian grammar and alphabet was prepared by Veniaminov, and in this way the Russians drew these people and their fortunes to them so firmly that no trouble or dispute ever occurred after its introduction between them. It is idle, therefore, to talk of the necessity of any new missionary work among these people.

At irregular though frequent intervals the Aleutian hunter is obliged to make long journeys to and from the sea-otter hunting-grounds, being absent, according to the circumstances and location, from one to five months from his family. We shall have to speak of him and his practices at length when we come to give the statistics of the fur-trade and its condition. While he is absent his family usually enjoys a letter of credit at some trader's store, or, in other words, the wife is allowed to draw therefrom those supplies of sugar, tea, and cloth goods which they have come to regard as indispensable to their existence. The traders have found it the happiest way of continuing their influence and at the same time aiding the best hunters in the different settlements. Many of the hunters make a special point before they leave on these journeys of putting a limit upon the extent to which their wives shall draw in the way of little luxuries and other things not absolutely necessary. The improvident extravagance of these people as a rule is strikingly illustrated by the conduct of the hunters who return from these long voyages successful or very successful. They first religiously settle all outstanding obligations; they then make a heavy draft upon their surplus, going in some cases so far as to purchase on the spur of the moment $200 music-boxes. Sugar and flour are very promptly cov-

ered into the kvass barrel, and invitations are sent out to their friends and neighbors, though in many instances the odor arising from the fermenting contents in question is sufficient to gather them all in, and the orgies begin, passing rapidly from stupid intoxication to frenzied riots and a rumpus. The first stages of this excitement very often open with hilarious dancing, for these people are exceedingly fond of that amusement when they are slightly under the influence of beer. It is only then that the old people can ever be induced to waltz or shake out the figures of the old Russian quadrille which they have learned in days long gone. These dances are stimulated also by the music of an accordion or concertina usually played by the women, occasionally by a man.

Speaking of music, these people possess a keen appreciation of it and enjoy it; have a quick ear, and in many instances pleasant voices. A favorite song of the Aleutians was brought up there by soldiers, and strains of "John Brown," "Marching through Georgia," and latterly whole strains of Pinafore, are hummed among the earthen barrabaras, from Attoo clear to the eastward.

A marked feature of improvement in the condition of these people has been very evident to the visitor who contrasts their living a short decade ago with what it is to-day. It consists principally in the fact that the thriftiest and most energetic hunters are building and have built frame houses, the boards and other material for the purpose being brought up from San Francisco by the traders. Many of these houses, perhaps the majority of them, have been built by the rival traders themselves and given as presents to the best hunters in the settlement as a means of securing their services and continued co-operation in the sea-otter business. The frame house, or cottage rather, because it is never but one story high, possesses this great advantage over barrabaras, especially when it is lined with tarred paper, that it is much easier kept in repair, and in long protracted damp weather the sharp refractions of heat and cold, or moldy exhalations and peculiarly sour sweating of the barrabara are absent. This cannot do otherwise than have a very beneficial effect upon the health of the hunter and his family especially.

We will pass next from this sketch of the leading characteristics of the Aleutian people to a rapid review of them as they live in their several villages.

Attoo is the extreme western settlement on the North American continent. It is the first land made and discovered by the Russians as they became acquainted with the Aleutian chain, Nevodzikov, in 1747, being the first to land. At that time the sister island Aggatoo, was also inhabited by the Aleuts, but to-day the only settlement is a village of 106 souls, on Chichagov harbor, at the rear of which high hills and mountains abruptly rise. These people are perhaps the poorest, pecuniarily speaking, of the whole Aleutian race to-day. The sea-otter, upon which they depend entirely for the means of purchasing those articles of dress and diet, which they have learned to regard as necessaries, in part, and all their luxuries—these animals have dwindled down to a mere tithe of the numbers in which they were primarily found on the hunting grounds; they are now only able to secure an average of 20 or 26 sea-otter skins each year. Though they are deprived in a great measure, or almost wholly, of any important or commercial activity in the line of trade, yet nature supplies them with a profusion of food, such as fish—cod, halibut, algæ fish, and a few salmon. They have an abundance of water-fowl eggs in season, and they are the only people of the group who have domesticated and reared the wild goose about their huts. They have a liberal supply of drift-wood landed by the currents upon the shores of this and

the contiguous rugged islands. They are so strongly attached to the land of their birth that they have resisted and declined many offers made by the traders to remove them to more favored localities for hunting the sea-otter. The village consists of one frame chapel with a thatched roof, and eighteen barrabaras grouped together as above mentioned. They also have an abundance of sea-lion meat, the skins of which, the intestines and sinews, add very much to their comfort and success in life. Though poor, they impress the visitor, in many respects, more favorably than do their wealthier and better situated brethren in other parts of the chain. The chief of the village or toione acts in the dual capacity of their leader in the chase and in the church. The men hunt sea-otters on the outlying reefs and rocks awash, seldom getting farther away from the village than 25 or 40 miles. Naturally their consumption of flour, sugar, and tea, cloth, woolen goods, &c., is limited by the causes above referred to, and they have recourse, in a great measure, for clothing, to the primitive bird-skin, "parkas," and other skin dresses, and garments such as were made and worn by their ancestors. In addition to the scanty yield of sea-otters they have turned attention to the pro'ection and conservation of the blue foxes (*Vulpes lagopus*). They kill about 200 of these now annually, and hope to increase the stock for the future. The island itself supplies them with nothing except a great plenty of "moroshkies" (*Rubus chæmavorus*) and "yagodies" (*Empetrum nigrum*). The grasses which grow on the sand-spits and sand-margins above the wash of the sea and tide-level, being the points where the greatest warmth is found in the soil during the growing season throughout this whole Aleutian chain, spring up very rank—as high as the waists and heads of the people themselves—a species of elymus. These grasses are used largely by the people in the construction of mats, rugs, screens, &c., adding very much to their creature comforts. They weave and work up a great many handsome specimens of grass work in the line of baskets.

We pass now to the next settlement in order as we go to the eastward, which is the village of Nazan, on Atkha Island. Here is a settlement of 235 souls, now the only location occupied by these people, where heretofore, coming from Attoo, many settlements existed on the different islands and islets. They are living here, with a church, in 42 barrabaras, and as they secure the large number, relatively, of 175 to 200 sea-otter per annum they are comparatively rich, and much activity and interest exists at the traders' stores. Possessing the means, as they do, they are all well dressed in garments of our own cut and pattern, and they use groceries in the line of flour, sugar, tea, and many canned fruits, &c., to a very large extent. It is a remarkable ethnological fact that the Atkha people, and Attoo also, spoke in early times, as they do now, an entirely different dialect from the one used by their brethren to the eastward; and it is still more singular that while these people are scattered here and there, even out as far as Kadiak, they still preserve intact their own peculiar idiom. So marked was this difference between the Aleutian tongue of Oonalashka and that of Atkha that the priest in preparing the grammar for service in their church recognized the incompatibility of the two tongues to the extent of making a grammar for each people, and it is employed to-day.

The inhabitants of Atkha embody, perhaps, the finest sea-otter hunters in the country. They make long journeys from their homes, carried on the vessels of traders, with all their hunting paraphernalia, bidarkas, &c., to far distant islands, where they establish camps and search the outlying reefs and points, as they learn by experience where

the shy sea-otter is wont to repair. They remain in camp, engaged in the chase, over extended periods of months at a time, when, in accord with their understanding with the traders, the vessels that carried them out return and take them back. Then the trader's store is made the grand rendezvous of the settlement. The hunters tally their skins, settle their outstanding obligations, make their donations to the church, and promptly invest the surplus, frequently large amounts.

They also have other natural resources here at Atkha. They have drift-wood for fuel, perhaps not to so great an extent as those of Attoo; and they have a monopoly of the fine skill and beautiful workmanship in the grass trade. There is no question or manner of argument in favor of the work as made up by any other people on the northwest coast, or in Alaska, which is at all equal to their own manufacture. There is something exceedingly subtle and exquisite in the delicate blending and weaving which the grass-workers of Atkha employ in the production of grass cloth and grass ware. This work is done by the women exclusively, and all credit should be given to them. They gather the grasses, prepare them with exceeding care for their primitive needles, and they spare no amount of labor and unlimited pains in the execution of their designs, which take the form of cigar-holders, basket-work, baskets, mats, &c. As an evidence of the exceeding labor and time required, a case is authoritatively cited wherein a trader ordered a native woman to make him a basket as the very best evidence of her skill; she was six years engaged upon the labor, and we need not say that the basket was a remarkable exhibition of beautiful handicraft. The visitor to the ethnological hall of the Smithsonian Institution can see for himself, and will instantly pick out from the many samples spread before him, embodying the grass work of all savage people, the Atkha specimens, conspicuous in their superiority of execution.

Berries, indigenous fruits, such as the berries mentioned at Attoo, are found here also, together with the fish and water-fowl; and it might be mentioned in especial that at these places, Attoo and Atkha, the Alaska mackerel (*Labrax monoprygis*) is most abundant, and is caught in the harbors where it is found.

The people of Atkha lived formerly and until quite recently at Korovinsky Bay, on the north side, where a church was established as long ago as 1826, but fish and drift-wood becoming very scarce, they moved over to the present site of Nazan. So thorough were they in this removal that they not only carried the church itself over with them, but even disinterred the remains of their first spiritual director and reinterred them in front of their new chapel—a delightful exhibition of fond memory and respect where we might perhaps have least thought to find them.

At one time, when under the control of the old Russian *régime*, Atkha was a very important place. It was the central depot of the western district, the jurisdiction of which extended over as far as the Kurile Islands, and the Aleuts now on the Russian Seal Islands of Bering's and Copper, off the coast of Kamschatka, are principally these natives and their descendants. They had cattle here as an experiment in those days, and goats; the latter became very unpopular with the Aleuts on account of their pugnacious disposition and their morbid propensity to feed upon the grasses that grew on the earthen roofs of their barrabaras. This stock-raising experiment may not have been a practical success, but its theoretical application was kept up until the time of the transfer, when the last of the bovine race disappeared. The fur-bearing animals of Atkha, outside of the marine visitors, are confined entirely to black and red and cross foxes.

The next settlement we find to the eastward is that of Nikolsky, on the southwest coast of Oomnak Island, a vilage fronting upon the straits of Oomnak. Here are 127 souls, living after the manner of the Aleutian people, with a church and 16 barrabaras. They, too, depend exclusively upon the sea-otter as their staple for trade. Of these animals they secure on an average about 150 yearly. This is their relative wealth, and they liberally purchase the usual supplies referred to at the trader's store. The island itself was the chief center and the main ground of that stubborn resistance which these Aleutian people made to the authority and gross usage of the Russians in early days. During those periods the island of Oomnak was the site of no less than eleven Aleutian villages, and the islands again, between it an Atkha, contained many settlements; but to day they are all embodied and consolidated in the village of Nikolsky. They, too, have fish in comparative abundance, but not to such a marked degree as that enjoyed by their western neighbors. There are several large lakes back of the village, fresh-water lakes, from which a small shallow stream meanders down through the settlement to the sea, and at certain seasons of the year salmon run up in such numbers and with so much persistency that they fairly crowd themselves out upon its banks, rendering it a thought of no concern whatever to the natives as to how many they shall take; it is a mere matter to them of stooping down to pick them up.

The usual characteristics of these people as portrayed heretofore exist. They have berries, water-fowl, and scant drift-wood, this being, perhaps, their only hardship, since loss of fuel in this respect entails great labor upon the women, who have to gather the "chicksha" or creeping tendrils of the *empetrum*. They have red, cross, and black foxes on the island, not to any great number, however. They have to make long journeys to other islands to capture sea-lions, and on that account they are not as well supplied with boats as they would otherwise be. The island of Oomnak was disturbed in 1878 by the upheaval and emission and exhibition of volcanic energy, which took place between the village and the prominent volcanic peak of the island, resulting in the erection of a small mud volcano, both of which are still smoking, and the latter sputtering. It is a curious fact that whenever there is any volcanic action on these islands the natives experience great difficulty in getting fish, which seem to be driven off, as it were, by the trembling of the rocky shores. So marked, indeed, is this effect upon the fisheries of these disturbed localities that native villages, to escape fish famines, have been moved to other points beyond their influence.

The natives here secure annually quite a number of the young fur-seals, as these animals are passed down from the waters of Bering's Sea into the North Pacific during the autumn and in early winter. They set great store by the flesh of these animals, and the skins are all used in the manufacture of rugs, blankets, and dress, none being exported.

We pass now to the consideration of Oonalashka and its outlying settlements. The village of Iliuliuk or Oonalashka, is the central point and chief village of the island, and, indeed, the main port of entry for all Western Alaska. Here is a vilage on the land-locked shores of Captain's Harbor, inhabited by 406 souls, who live in the settlement, including a large church, together with a fine building occupied by their priest as his residence, a school-house, 18 frame dwellings or single-story cottages, 50 barrabaras, and the stores and dwellings of the traders. The people of Oonalashka are living, perhaps, in

the most favored section of their district. They are sea-otter hunters by profession, as are all their brethern, making long journeys to Sannakh and its immediate vicinity, which is the great sea-otter hunting-ground of Alaska Territory, carried thither and brought back by the vessels of traders. Brought into contact, as these people are here, more frequently and closely with our own people than with their kith and kin to the westward, they are, if anything, more Americanized, and the expressions of "pigeon English," and other little signs of attention to and sympathy with American people, are manifested more frequently than elsewhere. Indeed, their participation with and exhilaration on the Fourth of July has become a matter of Alaskan notoriety; their foot-races, canoe-races, pole-climbings, wrestlings, and dances on that occasion surpass any other festivities created by or participated in by the people of Alaska. Another feature noted here is the extraordinary fact that out of these 406 souls 205 read and write—of course principally in the Aleutian language.

The town of Iliuliuk has a school-house in which a regularly-employed Russian and English teacher serves, but the attendance of the rising generation is very poor indeed; the youngsters seemingly regard the education which they pick up on the wharf among the sailors as far more congenial and satisfactory to their minds. This difficulty, however, of getting the young Aleuts to attend school was experienced before in this settlement by Father Veniaminov. The priest of the district residing here, Innokenty Shayashnikov, is an elderly man who has always lived among these people, and who primarily sprang from them. He is a man of real worth, and he is very much respected by his own people, and also by the traders. In this connection it may be well to say that the Russian bishop of the Alaskan diocese, who now resides in San Francisco, has taken the preliminary steps toward erecting for himself here a residence where he intends to live as soon as it shall be ready for his reception, thus removing from the "City of the Golden Gate" in order to be nearer the field of his spiritual labor.

The island of Oonalashka is one of the largest of the chain, with a singularly rugged, cut-up coast, deep indentations or fiords, which, in many instances, nearly sever these arms from the mainland. In many of these harbors are little settlements, all in close communication with Oonalashka, namely:

Makushin, a small settlement located in a sheltered bay on the west coast, immediately under the steep slopes and vast proportions of the smoking volcano Makushin. It consists of 62 souls and a chapel. It contains the oldest inhabitant of the island, who has an undisputed chronological record of 83 years, Peter Castromittin, born in 1797. This old man is a living witness to that remarkable geological convulsion which occurred in 1806, whereby a new island was lifted bodily from the sea, 22 miles north of Oomnak Island. He was one of the individuals who first noted the strange phenomenon, the darkening of the sky and the flaming of the fire, which so filled him with astonishment and terror that his trembling knees scarce could carry him back to report.

The people of Makushin are mere auxiliaries of the inhabitants of Oonalashka village, and furnish a contingent every year for the regular sea-otter hunting party that leaves Iliuliuk for Sannakh. They have an opportunity better than that enjoyed by any other settlement in their country to capture the young fur-seals in their passage through the straits of Oomnak in the fall, securing between 1,000 and 1,300 of these animals every year. Their fishing-grounds were so disturbed in 1878, by the volcanic eruption on Oomnak Island, that they were compelled

to move their old village to the present site, and here they will undoubtedly remain.

The Russian chroniclers tell us that their first acquaintance with the Oonalashka Island natives dates on their touching at this point in 1857, when they found the people here numerous and warlike, and they had a great deal of difficulty with them. To-day their descendants have the unenviable reputation of being the very worst of their class on the island—not vicious, but indolent and generally good for nothing. They trap foxes on the flanks of this great mountain which rears its fuming head high above them 5,000 or 6,000 feet, and they secure a small, but to them very precious, supply of drift-wood from the sea.

From Makushin, the next in order as we go west is Koshigin, an insignificant settlement of 73 people, on the bay of the same name, on the northwest coast. They have a small chapel, and are living in 17 barrabaras. They are sea-otter hunters, searching the coast of Oomnak, and going to Sannakh. They secure annually of these animals about 20. They trap between 300 and 600 red, black, and cross foxes; they enjoy good fishing opportunities—cod, halibut, and salmon in season. In the summer they repair to Chernovsky to make their small purchases at the trader's store, but in the winter a small branch of this store is located for their convenience within their village.

Chernovsky is the next settlement again to the westward and southward, situated on a very beautiful little bay and harbor of the same name, opening directly into Oomnak Parish. It consists of 101 souls, the usual chapel, and 16 barrabaras. The natives, as at Makushin and Koshigin, supply a regular number of hunters, who go over to Oonalashka and join the great sea-otter hunting party that leaves for Sannakh once or twice a year. Occasionally a party of 6 or 7 bidarkas is made up here, and they go in search of the sea-otter down the straits of Oomnak and around the reefs and small rocky islets found there. It is, however, considered the most dangerous bidarka journey in quest of otters that is taken by the hunters in that Territory, because they are exposed to the unbroken roll and wash of the vast Pacific. This is also an old settlement, one of the first known to the Russians. It is endowed with much ethnological interest by the presence of a cave, a little more than half a mile from the village, in and from which many of the peculiar Aleutian mummies, skulls, &c., have been taken. Apropos of this subject, in 1874 a trader of the Alaska Commercial Company was induced by Mr. Elliott, who was at that time in the Territory, to make an effort towards the exploration of the celebrated Kagaymil Cavern, on an island of that name in the "Four Mountain" group. This was done. Fine weather favored the attempt, and 13 mummies were taken from it, 11 of which reached the Smithsonian Institution in safety. They constitute the first examples of this kind that had ever been brought down and placed within the reach of scientists in this country; and they certainly presented the most interesting ethnological basis of comparison of the peculiar coincidence which exists in the methods of burial belonging to widely-separated places. The mummies of Peru and the mummies of Alaska, crouched in their exhibition cases as they are exhibited in the National Museum, are almost identical specimens.

The next settlement we find after traversing the entire southern coast of the island and reaching Beaver Bay, where we locate the village of Borka, on a small island called Spirkin, with a population of 139, a chapel, and 28 barrabaras—the old settlement at Bobrova was vacated in favor of the present site during 1848. The natives are in very close communication with their kindred of Oonalashka, who are distant

only a few hours' journey by portage and canoe. In some respects this village is the most remarkable one that we shall come to notice or have observed. The strange and subtile influence of the method and manner of living practiced by an old trader who was and is their leader, one Gregory Krukov, is strikingly illustrated there to-day. This man and his wife are singularly neat in their manner of living; they keep everything clean about them, and in the summer decorate their house tastefully with wild flowers. The natives, under the influence of his example, are living in their barrabaras, the neatest and cleanest of their people in all Alaska. They are living so without an exceptional instance, every house being as orderly and as tidy as its neighbor. They put large windows into their barrabaras, sand and scrub the floors, and their furniture, their beds, and window-panes tidy and bright, while pots and tumblers filled with wild flowers stand on the tables and window-sills. This is the point, or rather the old settlement, where Captain Cook first came in contact with and noted the Aleutian people, they being then only half an hour's portage from his anchorage in Samganooda Bay. Since that time they have called it "Anglieski Bookhta." There are people there to-day who recite the legend of Captain Cook's appearance with great earnestness, circumspection, and detail. So faithfully has the legend been transmitted from father to son that they still tell the story of how an "English captain came there, unloaded his ships, and then became frightened at the people and the Russians, reloaded them, and sailed away." Of course we know that Captain Cook made here a temporary transfer of his cargo and ship's stores, in order that he might stow them anew and better.

These people hunt the sea-otter here, securing annually about 20, and furnish also the regular quota to the Oonalashka hunting parties. They have also an equal or nearly quite as good an opportunity to get the young fur seals *in transitu* through Oonalga Pass, securing of these animals as many as 1,200 or 1,400 in good seasons.

From Borka we turn to Oonalashka, having thus made a circuit of these settlements on the most important island in the Aleutian archipelago.

The settlement of Illiuliuk, or Oonalashka, is destined to be in the future—as it has always been in the past—the principal port and rendezvous for all trade, of whatever character, which may be developed in that portion of Alaska.

From here we pass in review to the eastward, and we have to note the first settlement which we meet with on the island of Akutan, a settlement of the same name on the southwest shore, consisting of 64 souls, possessing the customary chapel, and living in 13 barrabaras. The men are all sea-otter hunters, ranging in pursuit of their quarry around the numerous contiguous smaller islands and the south end of the great island of Oonimak. The average catch of sea-otter reported here is 26, together with a few cross-foxes. They meet on their hunting grounds with their brethren of Akoon and Avatanak. They secure by diligent search a limited supply of drift-wood, and they have in the summer season, especially the months of June and July, an abundance of water fowl and their eggs.

They are closely joined on the neighboring island of Akoon by a settlement situated on the northwest shore of that land, where a village of 54 people, living in 12 barrabaras, and a chapel may be found. These people hunt and deport themselves in the same general method spoken of in regard to the Akutan settlement. They enjoy, however, the satisfaction of living nearer than their neighbors to the small rug-

ged island of Oogamak, which stands in the path, as it were, of the great Pass of Oonimak. Here, on the low rocks, a comparatively large number of sea-lions repair, and many hair seals are found throughout the year (*phoca vitulina*). The skins of these animals are secured by them and used in the manufacture of bidarkas, which they sell to the Sannakh hunters.

From Akoon we turn to the Avatanak, close by, and to the southward, where another small settlement of the same name is located on the western margin of the island, consisting of 19 people and 5 barrabaras, and, strange as it may seem, without a chapel, but it is true nevertheless. In hunting and living they do not differ from the method and action described with regard to the people of Akutan and Akoon. They do not participate in the chase of the sea-lion and the profit that arises from it, and the fact that among these 19 people there was but one child living this season speaks eloquently of their poverty and degenerate condition. In this respect we may include, perhaps, the inhabitants of Akoon, who appear somewhat enfeebled.

With this statement of the condition of the settlements last named, the enumeration of the Western Aleutian people and their villages ceases, and we subjoin a recapitulation of their numbers and divisions, for the more comprehensive understanding of it, in the form of a table; first stating, in explanation of the terms used therein, namely, "Creole," as distinct from "Aleut," the fact that the people are not of pure blood, nor have they been so for a great many years. They are mixed to such an extent that it is almost impossible to draw a line with absolute certainty between the pure native and the half-breed, or "Creole," as he is termed, though he may be only a quadroon. The term "Creole," therefore, is used here to signify all those natives who have positive traces of white blood in their veins.

Population of Oonalashka Parish.

Settlements.	Whites.		Creoles.		Aleuts.		Total.
	Male.	Female.	Male.	Female.	Male.	Female.	
Attoo	1	.....	15	17	39	35	107
Atkha (Nazan)	2	.....	6	8	106	114	236
Oumnak (Nickolsky)	2	.....	4	4	59	58	127
Iliuliuk (Oonalashka)	14	.....	80	82	126	104	406
Makushin	1	.....	13	17	12	19	62
Koshigin	1	.....	.....	.....	31	42	74
Chernovsky	3	.....	1	3	45	49	101
Borka	1	.....	3	3	65	68	140
Akutan	2	.....	.....	.....	33	30	65
Akoon	1	.....	.....	.....	25	29	55
Avatanok	.....	.....	.....	.....	8	11	19
	28	.....	122	134	549	559	1,392

We now pass to the second topic under the head of this chapter, by considering the people of Belkovsky Parish, directly to the eastward and in this same district. The chief settlement of this division is the town of Belkovsky, situated on the mainland of the great Alaska peninsula, midway and well to the northeast of the celebrated Sannakh sea otter hunting grounds in the west, and the equally well-known cod-fishing banks of Ounga. Here is an Aleutian village perched on the summit of a bluff and clinging to the flanks of a precipitous mountain,

consisting of 268 souls. They rejoice in the possession of a church, and are busily engaged in the construction of a new edifice this summer of a similar character, in which they have invested the sum of $7,000. They are famous sea-otter hunters. They are living in 30 frame cottages and 27 barrabaras.

These people are actively engaged in the sole industry of the place—sea-otter hunting—securing, within a radius of fifty miles, the large number of 1,900 or 2,000 of these rare and costly peltries every year. Under some civilizing influence or home restraint, they ought to be, comparatively speaking, a wealthy community; but, as the case now stands, every cent of their surplus earnings is squandered in dissipation such as we have described as the course of these people. They are dressed in garments similar to our own style and make, seldom using those of olden time unless driven to do so by stress of poverty. The natural food resources of the locality—fish, berries, &c.—are abundant and somewhat varied, and until quite recently they used to have an opportunity of getting an abundance of reindeer here; these animals coming down at regular intervals from the great land to the northeast in droves, extending as far as the westernmost point of the peninsula, and running over the narrow shoal water and straits of Morzovie to the rugged and extended mountain sides and valleys of Oonimak Island. Latterly, or within the last year or two, the reindeer, from some cause or other, have ceased to make their appearance.

These people—fifty per cent. of them—are keen enough to read and write, principally in the Aleutian dialect, however. They support a school of their own volition, and a semi-official report of the teacher thereof for the past year gives an average attendance of twenty-seven males and twenty-three females, which would indicate a very fair proportion of the youth.

For fuel, the people purchase wood brought from Kadiak Island, or coal brought hither from Nannaimo, the natural resources in this respect being confined almost entirely to stray sticks of drift-wood and the "chicksha," which the women gather on the hillsides, and to which we have already referred as the fine trailing vines of the *empetrum*.

The large capture of sea-otters, and consequent flow of the traders' money, excites a degree of extravagance among these people which is not witnessed elsewhere in the Territory; and it is a very strong proof of the old saying that wealth does not bring content to the human mind, be it ever so high or ever so low.

The harbor of Belkovsky affords but a dangerous anchorage for a sailing-vessel, and it is therefore barred out from the path of commercial interest. Only those vessels belonging to the rival traders located there make the landing.

From Belkovsky as the center, we turn to Nikolaievsky, a small village located on an indentation of this same peninsula, some 29 miles away. It contains 43 people, living in 9 barrabaras, together with the usual chapel. They are simply adjuncts of Belkovsky village, immediate but poor relations, enjoying the same natural advantages and no more.

From Belkovsky to the westward and on the mainland near its farthermost extremity, we find the village of Protassov, a settlement consisting of 99 people, living in 5 frame dwellings and 14 barrabaras, together with the ever present chapel. This settlement, in its method of living securing through its hunters an average of about 500 sea-otters every year, is equally opulent and equally extravagant and just as dissolute as its neighbor Belkovsky. It is said, and we ourselves have

witnessed the fact, that in spite of an average revenue of nearly $1,000 per annum to each family, the whole place, without a single redeeming case, presents an aspect of great misery and debauchery, which has put its stamp more firmly and more shamefully upon the people of this place than it has made its mark elsewhere in all Alaska. They have their dietary varied by their juxtaposition to the walrus banks, sand-bars, spits, and islands to the north, where these *pennipedes* are found at times in large herds. The flesh, blubber, and oil are considered by the people of Protassov great luxuries. The reindeer, and brown bears following in the wake of the reindeer, used to supply them with an abundance of meat, but as we have said before in noting the disappearance of this animal during the last two years, this supply is failing.

Near this village, less than half a mile off, are a series of warm sulphur springs which would afford the sickly natives partial or permanent cures, could they only be induced to bathe therein, but it is said, and we believe it, that while there is not a man, woman, or child in the village free from disease, yet not one of them can be induced to the exertion necessary to try the efficacy of the waters.

From Belkovsky to the northward and eastward about 60 miles, on Peregrebnoi Islet, is the little village of Vosnessensky, embracing 22 people who live in 5 barrabaras, and worship in a chapel. They are also sea-otter hunters, reaching out within a radius of 50 miles from home, searching the reefs, rocks awash, and little islets, for this quarry, securing an average of 50 or 70 skins every year, which in proportion to the small number of people there bring them a very large revenue. This they expend on the counters of the rival traders in their stores in the village, for clothing and groceries, as before mentioned in the case of their kindred elsewhere. The old men and boys trap foxes, but this is only incidental, a side issue as it were, to the great business of sea-otter hunting. Fortunately for them the situation of their islet is such that it intercepts and retains for them drift-wood sufficient to supply them with fuel.

The next contiguous village is the settlement of Ounga or Delarov village on the island of Ounga, one of the Shumagin group. This is a place almost if not quite as large as Belkovsky; in fact it is a rival metropolis. It has a population of 185 souls, living in the usual way, a church, 14 frame dwellings, and 21 barrabaras, and a number of new frame dwellings this year in the course of construction. The occupation of these people is centered in and devoted to the chase of sea-otter, of which they gather about 600 skins every year, and for which they range in their hunting trips over the Shumagin group, a very large area of hunting grounds. They, too, consequently enjoy a revenue, if it may be called enjoyment, of about $600 to each family per annum from this chase, but it brings with it the attendant curse of dissipation and low debauchery.

They have been re-enforced here in a somewhat unusual manner by 15 white men, who, in order that they might remove themselves beyond the pale of the law—which requires that none but natives shall hunt the sea-otter—have married native women and are admitted by special authority of the Secretary of the Treasury to the same privileges of the people themselves. It is said that these white men have been so successful during the past two or three seasons, that word of it reaching their friends, is bringing more re-enforcements of the same character rapidly into the country. It is easy for an impartial observer to take notice of the fact that with the rapid substitution of the superior acumen, energy, and vitality of the white race in this matter on the sea-otter grounds of

Alaska, it is only a question of a comparatively short time ere the Aleuts themselves will go to the wall. It can be readily inferred from parallel cases where white men have lived in contact with an inferior race after this fashion, that the methods and the manners of these white proselytes tend never to elevate the mind or strengthen the hand of their dusky neighbors, at least we deem it well worthy the attention of the Secretary of the Treasury, who undoubtedly has the well-being and future prosperity of these Aleutian people in his keeping.

The next settlement is the village of Korovinsky, on a small island of the same name, consisting of 44 creoles, to the exclusion of all other races, living in 5 small frame dwellings, with a chapel, but no barrabaras. This settlement was originaly founded by retired employés, or those who had served out their time under the old Russian Fur Company. Their descendants to-day, above enumerated, are supporting themselves here in comfort, principaly by close attention to little gardens, where they raise potatoes, radishes, and turnips, and by keeping a small number of hardy Siberian cattle, chickens, and ducks, together with incidental trapping of foxes during the winter. They also hunt the sea-otter, but do not get a great many. Some of the young and hardiest men are occasionally employed at the cod-fishing stations in the Shumagin group.

With this description of Korovinsky and its people, the notice of the Belkovsky Parish closes, and we again submit, as a concise recapitulation, the following table showing the numbers, races, &c., therein:

Population of Belkovsky Parish.

Settlements.	Whites.		Creoles.		Aleuts.		Total.
	Males.	Females.	Males.	Females.	Males.	Females.	
Belkovsky	9	2	39	50	82	86	268
Nikolaievsky	.....	.....	.....	.....	22	21	43
Protassov (Morshevoi)	2	.....	12	9	41	36	100
Vosnessensky	1	.....	.....	.....	8	13	22
Ounga	15	.....	30	39	46	55	185
Korovinsky	.....	.....	26	18	.....	.....	44
Pirate Cove	7	.....	.....	.....	.....	.....	7
	34	2	107	116	199	211	669

Before ending this chapter on the Aleutian people proper, we are obliged to take cognizance of the natives living on the Prybilov group, or seal islands, of Alaska. These islands are situated 190 miles northwest from Oonalashka, in Bering's Sea. Their inhabitants were primarily taken in early time by the Russian traders from the Aleuts of Atkha and Oonalashka, and up to the time of transfer in 1867 were frequently changed or relieved. They are living on the islands of Saint Paul and Saint George, in villages of the same names. The people of Saint Paul and their peculiar industries we shall have occasion to speak of at length and in detail in our chapter upon the trade and resources of Alaska. Suffice it here to say, that the village which they occupy to-day of Saint Paul is entirely Americanized, and resembles a new England hamlet, laid out in regular streets, consisting of sixty-four or sixty-six cottages, with a large church, a school-house, and priest's dwelling.

Saint George, 27 miles as the crow flies, to the southeast, is a smaller

village but essentially of the same character, the earthen barrabaras being replaced by snug cottages. There are 279 souls in the Saint Paul village, and Saint George posesses 88.

The peculiar relations existing between these people, the Government of the United States, and the Alaska Commercial Company, are such that in one sense of the word they are part and parcel of the triumvirate, and we shall in speaking of the wonderful seal life and its wealth hereafter, take occasion to allude to them and their characteristics. They are so much better off, in a worldly sense of view, wealthier, happier, and in every respect physically superior to their brethren elsewhere in Alaska that they come under a separate head, and are indissolubly bound up with the business on the islands to the exclusion of all other interest whatsoever. The following brief table sets forth their numbers, &c.:

Settlements.	Whites.		Aleuts.		Total.
	Males.	Females.	Males.	Females.	
Prybilov group:					
Saint Paul	13	1	128	156	298
Saint George	4	.....	35	53	92
	17	1	163	209	390

RECAPITULATION OF ALEUTIAN DISTRICTS.

	Whites.	Creoles.	Aleuts.	Totals.
Males	79	229	911	1,219
Females	3	250	979	1,234
	82	479	1,890	2,451

CHAPTER II.

THE KADIAK PEOPLE.

The district of Kadiak, which comes now in order for review, is essentially embraced by the scope and area of the great island bearing that name, on the northeast point of which, up an arm of the sea called Saint Paul's Harbor, is situated its commercial center, the village of Kadiak. These people who live in this district—nearly all of them—are entirely different from the Aleutian stock, with whom they have no blood or linguistic affinity, and with whom they have scarcely mixed. They are of the Innuit race and can only be considered as next in order from the simple fact that they are Christians as a whole, and, after the Aleuts, were most passive under the control of the Russians, though they made at first bloody and stubborn resistance.

Kadiak Village, or Saint Paul Harbor, is the central and all-important settlement in the district. It was the first grand depot in which the

governor of the old Russian Trading Company made his headquarters and controlled the business therefrom of the whole region of Alaska. In many respects it enjoys climatic advantages, more sunshine and less fog, more clear weather and less tempest than any other section save the region of Bristol Bay and portions of Cook's Inlet. It was styled by the Rnssians, after they had made a very exhaustive test of the comforts and natural resources of living through the Territory, as the garden of Alaska; and when they were compelled in self-defense to remove their capital down to Sitka, in order that they might thereby better supervise and resist the encroachments upon their own domain by English and American traders, they did so with many regrets and frequent allusion to the sad contrast between the two places—always in favor of Kadiak.

Before enumerating the Kadiak people as they live in the villages of their country, we will describe the typical features of the race. The Kadiaker has a fairer skin than the Aleut; he stands higher in stature, approaching an average of, say, 5 feet 7 or 8 inches; he has a broader face relatively, and his whole "make-up" physically is more powerful than that of the Aleuts. Like them, he has small feet and hands, small black eyes set in heavy sockets; like them, he has little or no beard, with an abundance, as all those people have, of coarse black hair, which he cuts off just above his shoulders. A nice distinction will be made in looking at the moustache—the native of Kadiak wears more hair on his upper lip than we observe among the Aleuts.

They are distinguished in disposition by being light-hearted, freer, and more jovial than their neighbors above referred to; and, on the other hand, they have less patience during seasons of suffering and privation. When they gather together they are conspicuously talkative, abounding in jokes and the recitation of funny legends or stories applicable to the subject. As they paddle their canoes or shoulder them in making long portages, they enliven their labor by continuous songs, snatches from church tunes, or lively airs picked up in the settlements. They are in every respect much more emotional than their kindred to the westward.

The traders say that the Kadiak hunter is just as brave as his Aleutian brethren, yet, owing to the more clumsy construction of his bidarka, or canoe, he is not nearly as skillful in the pursuit of his quarry; in other words, that the extraordinary journeys and landings made by the Aleutian hunter in the path of howling gales of wind, enveloped in driving sleet, and whirled by furious gusts as he goes down to some rock awash, or to steal upon a reef or tidal bar—that these frequent exhibitions of extraordinary hardihood are never made by the Kadiaker.

With respect to their method of living in their settlements, what we have said of the leading characteristics in the Aleutian settlements is and will be wholly applicable to these, with this difference and the influence that it may have in modifying to some extent the comparison; they spend more time on land, traversing mountain trails in quest of bears, wolves, foxes, and the land-otter and marmot. Crossing over Shehkhov Straits to the mainland, they, in addition to this list of land mammalia, hunt the reindeer for its valuable desiderata of flesh, skin, and sinew. Such exercise on the land undoubtedly gives them their superior physical stature and development from head to foot when contrasted with the physique of the Aleutian, who seldom or never looks to the land either as a foothold for a journey or as a means of subsistence.

Another feature in all these Kadiak villages, quite distinct from those which we have been describing, is the presence in most of them of the

"kashima," or public dance, work, and council house, which in itself points to the enhanced social dispositon of these people.

Having thus called attention to the points of more striking similarity and dissimilarity existing between the Aleutian and the people now under discussion, we will proceed to notice the villages in their district.

First in order is the central point of Kadiak. Here is a settlement of 270 inhabitants. They are living in 101 frame houses, all in good condition, and many of them legacies of the old Russian company. The houses are clean and neat as a rule, the windows bright, and the visitor is led to exclaim that it would not suffer in comparison with a Swedish or an English fishing village. It supports a large church and its priest. Its people are, as a rule, devoted to sea-otter hunting; but they find a great deal of transient employment in loading and unloading the small shipping that repairs to and belongs to that port. They maintain little gardens, and cut cord-wood for the trade elsewhere in the Territory, which is a very considerable industry. They keep a small number of cattle, descendants of Siberian stock, and with that better success that attended the efforts of the Russians here than elsewhere and which now seems to attend the people here also to-day. The herds of cattle, however, are necessarily small on account of the great trouble of providing for them during the winter and in protecting them from the ravages of bears, as they wander in the valleys throughout the summer. A singular instance of the difficulties attending the stock-herders here is related of one owner of five head of cattle who lost them in the following manner: They were away from his house, some little distance, near a small pond of water, and some bears—how many deponent saith not—came down from the mountains and drowned these unfortunate bovines by ducking their heads, with their powerful arms, beneath the surface of the pool. This subject of stock-raising, however, as well as that of gardens, we shall refer to in another chapter.

There are at Kadiak 20 or 30 white men, Russians and our own people, who have in reality settled, many of them married, living there and calling the place home.

From Kadiak we are next led to review the settlement of Wood Island, opposite, where 156 people are living in 13 frame and log houses and 8 barrabaras. They are engaged in sea-otter hunting during the summer, and cutting up and storing ice during the winter. Here are kept the only equines of the Territory, four horses being stabled and sheltered. They have cattle—the largest herd in the Territory—as many as 20 or 30 head; and they also have the only road in the Western Territory worthy of mention, one running around the island 12 or 13 miles in length, made principally with a view to exercising the horses aforesaid in the summer time when they have no ice to haul. They also have a small ship-yard here, where little vessels of 25 or 30 tons are built for fishing and trade.

From Wood Island the next settlement in order is on Yelovoi or Spruce Island, where to-day we find a village in which 78 creoles alone are living. These people live in 15 frame houses, have a church and a little school-house, in regard to which mention may be made of the fact that for thirty consecutive years during one period of the past history of this place a Russian monk made his abode therein, teaching school for the children of the town itself and neighboring villages as they came; giving instruction also in rudimentary arts, agricultural industry, &c. The people of this settlement are principally engaged in small gardening and the care of little bands of cattle, and some of the young men follow the chase of the sea-otter.

From Spruce Island we cross the straits between it and Kadiak Island, back to a little village thereon named Oozinkie, where there are 45 creoles living in 10 frame houses; and strange to say, they have no chapel, though their method of living is just the same; they do, however, avail themselves of sacred privileges and enjoyments found beneath the shelter of the church of Yelovoi. They do not differ in any respect from the Spruce Island people in regard to their occupation and method of living.

We again pass from the straits of Oozinkie to the Afognak village on the southern shore of the island of the same name. The settlement consists of what used to be not long ago two distinct villages, but which are now almost united by the erection of dwellings in between, closing the gap as it were. Three hundred and thirty people are living in 32 good substantial log and frame houses. They have, of course, a large chapel, though they have no school-house or school. The exercises of the church have enabled a number of them to read and write. They are principally the descendants of the old "colonial citizens." They have here the greatest extent of land under cultivation found at any or all of the settlements combined elsewhere in the Territory. In the care and conservation of these garden patches, attending to little herds of cattle, together with small flocks of chickens, ducks, &c., they pass their time, but they are employed in boat building, at which they are expert, and for which they have many orders, chiefly in the line of row-boats for the fishermen. Many of the young men are sea-otter hunters, more so now than formerly. They also cut a great deal of wood here which the traders buy and sell in less favored sections.

These villages which we have just cited, it will be observed by reference to the table following this chapter, are peopled by very few of the Kadiak natives themselves, the inhabitants being nearly all creoles.

From Afognak the next settlement in order is Ooganak Bay, where there are two little villages on the opposite sides of the shores in the deep indentation of the coast line. Here are 41 and 32 people respectively, living in the upper village with 6 barrabaras, and in the lower with 3, but the dwellings are large family barrabaras after the old style. They are true natives, and are without a chapel, though they are all Christians. They are engaged in sea-otter hunting in the hunting grounds of Shelikhov Straits, from Cape Douglass to the southward and westward.

These people, in common with the natives of Kadiak, are land hunters to a great extent, trapping and shooting foxes, bear, &c., and the land-otter, while for their own immediate subsistence they draw largely from the sea, such as codfish, halibut, mussels, &c. They have an abundance of fuel, timber everywhere being common, but at their settlement the extreme western limit of timber on the island is reached.

From Ooganak we go down to the Ooyak Bay, which is the largest indentation of the sea made in the coast of this large island, a deep gorge and arm of it nearly subdividing Kadiak itself. Here is a settlement, situated on the western shore of the bay where it narrows into a fiord or channel directly opposite an island in the passage. Seventy-six natives live here in 10 barrabaras, and they have a very small chapel. During the winter season they hunt the sea-otter, but the major portion of the able-bodied natives of the village are engaged as employés of the salmon fishing and trading companies. They have an abundance, as might be inferred, of natural food in the line of fish, and they have their share of land mammalia, bears, wolves, &c. They also, in common with the people of Ooganak, frequently take journeys across the straits to the mainland in quest of reindeer.

From this place, five miles over a trail made expressly for this purpose, these natives go to Karluk River, where we find a settlement of the same name, of 201 natives and creoles, living in 10 frame houses and 11 barrabaras, with a church or chapel included. This has been from ancient time of Russian occupation the salt-house and packing headquarters for the preservation of their salmon used in the trade. They then put up here their air-dried salmon, or "yukala," with which they feed the people away over at Sitka. All dried fish, such as codfish, halibut, &c., are called "yukala" in this country. These natives are living here principally employed and engaged under the auspices of the several fishing and trading companies, who make this their headquarters for the purpose of preparing the salmon for the San Francisco market, and the "yukala" which the traders use in the progress of their trade throughout the Territory. In the winter season, when these operations are temporarily suspended, the men devote themselves as a rule to sea-otter hunting, with the usual side issues of bears, wolves, and other hunting and trapping.

From this busy little place we pass clear around the whole extent of the southward and southwestern coast of the island until we reach Alitak Bay, wherein the first settlement from our last point of departure is situated on the eastern shore of the bay near its head, where these people are living in a village called Akhiok, embracing 114 people, residing in 7 barrabaras, together with a chapel. They, too, are sea-otter hunters—altogether, for that matter—with the usual diversion of fox and bear hunting. These people, like those of Ooyak and Karluk, are deprived of forest timber; they get a scanty supply of drift-wood, and depend mainly upon the luxuriant "chicksha" and the talnik or creeping willow. The traders, however, ship a good deal of wood to Karluk.

These people last specified have a very extensive range of sea-otter hunting grounds, reaching as far down to the southward and westward from their home as the barren island of Ookamok, where, in olden times, the Russians had a sort of penal settlement, placing their refractory and vicious employés here as another Botany Bay, with the sole resources thereon of trapping the ground-squirrel or Parry's marmot, which was made up into "parkas" that were valued very highly by certain tribes on the mainland. The marmots from this desolate island possess a peculiarly bluish ground tint not characterized by those found in any other district. This color made them popular and prized. The last of these people, or rather their descendants, in 1870, growing thoroughly aware of their lonely existence, removed *en masse*, in two huge bidaras, in which they made the long sea voyage from their desolate homes to Kadiak, loaded down with their goods and chattels almost to the water's edge. The story told of their reason for removal is both amusing and instructive, as it throws a certain amount of light on the practical workings of misguided though benevolent intention. A certain representative of one of our Protestant boards of missions, who was charged by the government with an examination into and the duty of making a report on these people of Alaska and their condition, in the course of his peregrinations through the Territory touched at this island in 1869, ignorant of the fact that he beheld before him the survivors of a penal colony. They came to him and told him a pitiful story of their poverty and privation, whereupon he landed on the beach stores from the reserves of the United States stock belonging to the vessel on which he was traveling, and left them to eat, drink, and be merry. They did; and months passed by in which they fared sumptuously. The end was reached; the reaction was great; they determined to pack up and move

somewhere near to such kind benefactors; and hence the hegira. Of late many of these emigrants have been taken back to their former home to hunt sea-otters, these valuable animals having increased during the temporary abandonment of the island.

A small settlement is contiguous to Alitak and close by, named Ayakhtalik, where, on a little islet called Goose Island, live 101 souls in 8 barrabaras, without a chapel. They are also sea-otter hunters, joining in with the people of Akhiok in the making up of all their hunting parties. They have, of course, an abundance of fish and water fowl, and drift-wood in great plenty. They also make little fox-hunting excursions, and the like, and living, as they do, so close to Sitkhinak Island, are enabled to secure quite a number of the valuable skins of the sea-lion.

The next settlement in order, as we turn this extreme southwestern point of the island and proceed up, is Kaguiak, a small settlement situated immediately in the rear of what Captain Cook called "The Two-Headed Cape." Here are 132 creoles and natives, living in 12 barrabaras and 4 frame houses, with a church and 3 rival trading stores. They also join in sea-otter hunting, participated in and directed by the combined effort of the natives of the south-shore settlements. It should be borne in mind that these people do not pretend to make this great sea voyage down to Ookamok and elsewhere on those hunting grounds in their open bidarkas; they are all carried to and from such places on the decks of traders' vessels. It has, however, been done by exceptional examples of what these people can do, but it is not the practice—far from it. They fish, have a few head of cattle, keep chickens, have plenty of eggs, and the flesh of wild fowls beside. It is the habit of the "tundra" goose (*B. canadensis*), which breeds in the far-off Yukon country, to spend the winters in this neighborhood, where, on the hillsides, they rest in extensive flocks, and where they seem to find, during their sojourn in these lofty places, an abundance of food; for, as the natives capture them, they are always found exceedingly fat. Large numbers of these geese are annually prepared, by a rude system of air and smoke drying, for exportation; principally to Kadiak. They also capture a few sea-lions on the outlying capes and islets; and they have an abundance of fuel in the form of drift-wood, "talnik," and "chicksha."

In this connection, as we view the evidence of great abundance of natural food here secured, we turn back to the consideration of the fact that the first Russian hunters who ever landed on Kadiak Island stepped ashore on the beach at the extreme southern head of Allitak Bay. They were under command of Stepan Glottov, who has been rendered notorious and infamous by the Russian records of his cruelty and inhumanity on the Aleutian Islands. He landed here in 1762, with his "Promyshleniks," late in the season. They were attacked during the winter with scurvy, and in the spring, when thus enfeebled, were attacked by the natives here and obliged to put to sea with less than a fourth of their original numbers.

From Kaguiak we pass on up to the site of the first permanent or fixed settlement of the Russians on Kadiak Island, at Three Saints Bay, where Shelikhov landed from the vessel of that name, the Three Saints, and founded the post on which the present settlement is based. Shelikhov, from these headquarters, transmitted several bulletins to the home government, in which he claimed to have successfully fought and stormed the natives' strongholds, slaying them by hundreds, and finally had conquered and subdued 50,000 people to the Russian rule. Of

course, in the light of recent facts and records, it is safe to divide those figures by ten, in order that a true estimate of the number of natives then brought by Shelikhov within Russian order may be known.

To-day the settlement of Three Saints Bay consists of 293 creoles and natives, living in 2 log houses and 19 barrabaras, together with a church. They are engaged principally in sea-otter hunting, and in all respects are equally favored by products of land and sea, such as we have noticed as peculiar to the other settlements just below them. They have a little advantage in the possession of fine halibut fishing grounds beneath the surface of the bay, where they live. They have an abundance of drift-wood, which is very acceptable to them, because they live just far enough away from the western limit of timber on this island to render its use practical. The first scattered clumps of forest trees lie back and away from them 10 or 15 miles. Baranov, in 1796, removed the headquarters which Shelikhov established here for the Russian Fur Company to the present village of Kadiak, which in turn was removed, as we have before cited. Shelikhov established this post in 1785.

The next inhabited point above and beyond Three Saints Bay is Orlovsk village, situated on the deep indentation of Eagle Harbor. Here is a large settlement of 278 natives and creoles living in 2 log houses and 19 barrabaras, with a church. They are primarily sea-otter hunters. They also enjoy the opportunity of successful sea-lion hunting, securing annually a great many of these animals, the skins of which are so precious for the construction of their canoes, to say nothing of the intrinsic value of the flesh and sinews. There is a small herd of cattle here which contribute in a great measure to the better and more comfortable existence of the people. They enjoy the same fishing advantages, having perhaps the best grazing country on the coast; they keep poultry, and have an abundance of wild fowl in season.

At Orlovsk we complete the circuit of the island, returning to Kadiak; and now we pass over on to main land in rapid review of the settlements which we shall find there.

Beginning with Mitrofania, a small islet right off and to the southward of the mainland, a little hamlet of 22 souls is found living in two or three log houses and given entirely to sea-otter hunting.

From Mitrofania we go to Kaluiak, another small village in the western bight of the large bay of Chigmik. There are 30 people here living in 4 barrabaras, and are without a chapel. They are engaged in hunting deer back in the mountains, and have the usual supplies of fish and the natural products which we have referred to in this section.

From this point we pass over to Sutkhoom Island, closely adjoining the mainland and near the head of the large bay opposite. Here is a settlement of 25 people living in 4 barrabaras, and are without a church. They are sea-otter hunters.

From Sutkhoom the next point in order is the village of Kuyukuk, on the mainland, under the shadow of Mount Chiginagak, consisting of 18 people, who live in 2 barrabaras; they have no church.

Then we pass over quite an extended reach of the coast, where we meet with no permanent or fixed villages until we come to Katmai, directly opposite and across the straits from Ooyak Bay, on Kadiak. This is a point where we find a village of 218 people, creoles and natives, who are living here in 20 barrabaras, and have a church. These people are all engaged, as a rule, in sea-otter hunting, sending out large parties north and south from there up and down the coast. This point formerly was the center of the mainland coast trade as far down as the Shumagin Islands and up to the northeast as far as Cook's Inlet; it was

the gate through which parties making the portage to Bristol Bay by the Igageek route and returning therefrom by the way of the Naknek portage, taking the first line of travel when they are loaded heavily, and coming back by the latter when they have no burdens; but now a rival trading-post has sprung up at Cape Douglas and Katmai's glory has departed. The Katmai people have timber attheir command, such as poplar and birch, which grows in fair abundance along the Katmai River, reaching up a little way on the hill sides. They have an abundance of fish, plenty of water fowl, and in the mountains, which rise abruptly around them, bear, deer, land-otter, among the animals, and the ptarmigan (*S. albus*) and ruffled grouse (*Bonasa sabinii*) are found. At this point excellent cranberries are gathered abundantly by the people. When we made this portage last October, we were struck by the fact that the tourist might land at Katmai, and in one day's foot travel stand with us at the summit of a mountain pass, the divide proper of the peninsula, where he would be compassed on every hand by the grandest visions of Alpine scenery, snows, and glaciers.

The next settlement beyond, and on this coast, is on Kukak Bay, a little further up the coast, where we find a small settlement of 37 souls, living in 4 barrabaras, without a church. They are sea-otter adjuncts and contingents of the Katmai people.

From here we pass rapidly up to Cape Douglas, within the shelter of which, and on the north side of a little bay, is the settlement of Cape Douglas. It has 46 souls, with a chapel, 7 barrabaras, and 2 trading stores. This is also the terminal point of a portage over to Bristol Bay, but it is much longer than the Katmai lines of traverse and is not favored. The Cape Douglas people are sea-otter hunters, with the same natural advantages as those enjoyed by the people of Katmai.

With the mention of this settlement we complete the circuit and enumeration of the people of Kadiak Parish, and we now pass to a view of the Cook's Inlet district, or "Kenai mission," as it is called by the Russian Church.

Population of Kadiak Parish.

Village.	Whites.		Creoles.		Kodiak Innuits.		Total.
	Males.	Females.	Males.	Females.	Males.	Females.	
Saint Paul Harbor	19	1	124	129	6	9	288
Wood or Liessnoi Island	2	.....	24	32	54	45	157
Yelovoi or Spruce Island	.....	.....	40	38	.....	.....	78
Oozinkie	.....	.....	20	25	.....	.....	45
Afognak	.....	.....	104	91	76	68	339
Ooganak North	.....	.....	.....	.....	20	21	41
Ooganak South	.....	.....	.....	.....	17	15	32
Ooiak	.....	.....	.....	.....	36	40	76
Karluk	.....	.....	12	12	139	138	301
Akhiok	.....	.....	.....	.....	66	48	114
Ayakhtalik	.....	.....	2	2	48	49	101
Kaguiak	1	.....	3	6	67	64	141
Three Saints Bay	.....	.....	13	10	109	87	219
Orlovsk	.....	.....	10	7	123	138	278
Mitrofania	.....	.....	10	12	.....	.....	22
Kaluiak	.....	.....	1	.....	19	10	30
Sutkhoom	.....	.....	.....	.....	12	13	25
Kuyukak	.....	.....	.....	.....	10	8	18
Katmai	.....	.....	19	18	94	87	218
Kukak	.....	.....	.....	.....	20	17	37
Douglas	.....	.....	2	4	22	18	46
	22	1	384	386	938	875	2,606

CHAPTER III.

THE KENAI MISSION OR COOK'S INLET.

In revewing this division, which is so compactly compassed by the lofty mountain ranges to the westward and northward, closely bordering on that great estuary known as Cook's Inlet, and hemmed in to the eastward and well to the southward by the Kenai Peninsula, we have to take notice of a district much inferior as regards its wealth in trade, but in itself quite as interesting and as instructive—a portion of the Territory which will always possess a position of prominence whenever the subject of Alaska and its resources is considered.

When the Russian traders first penetrated into the uttermost recesses of this region under the lead of two rival companies in 1787–1789, they literally made war one upon the other, scenes of piracy and bloodshed being enacted in swift succession for ten long years, until old Baranov with his iron hand took the disputants by the throat and sent them to Siberia for their judgment.

The natives of Cook's Inlet are strongly defined as a separate people from those of Kadiak, both in language, disposition, and appearance. They are rather more like what the sea-coast people of British Columbia call "Stick" Indians, a name by which all are called who live back from the sea. The average man in the Kenai tribe is an Indian of medium height, according to our own standard, say 5 feet 8 inches, well built, lithe, and sinewy; the eyes are black and small, the nose rather prominent; indeed the observer will be surprised at the number in this tribe who have a nose like that ascribed to Julius Cæsar. Their months are large, lips rather full, with a chin perhaps not so prominent as that of the Aleutian or Kadiak type. Their skin is darker, a shade or two, very perceptibly darker, though examples of comely young women can be met with frequently, exhibiting a very fair complexion with rosy red lips. Their women are as a class much more prepossessing in personal appearance than are those of the people we have just described in the preceding chapters. They wear their hair, which is thick, coarse, and black, much longer than the Kadiaker; the males gather it into a thick stubby braid hanging back of their heads, thickly larded with grease and sometimes powdered over with feathers and down. They seldom paint their faces or their bodies, nor do they tattoo.

As we pass from Kadiak Parish, leaving Cape Douglas to our back, and going north up along the western shore up Cook's Inlet where we first meet these people, finding them in their greatest number and primitive simplicity at the head and northern limit of the gulf in the Sushetno and Kinnick River valleys, we see them all dressed in buckskin shirts and trowsers, men and women alike. The practice here of clothing the females in trowsers is doubtless borrowed from the Kutchin tribes over the Divide. Many of their hunting shirts and breeches are tastily embellished with porcupine quill and grass braiding or bead embroidery; while the ears and noses of the men are pierced for the insertion of the pearly white shells of the *Dentalium*. Their appreciation of this shell is such that the traders now find it almost the only portion of the Territory where they have a steady call for them. The women dress in almost the same cut and fashion of garments as those worn by the men. They have, perhaps, as is the custom of pure Indian people, much heavier burdens in the line of manual labor laid upon them than those imposed by the Kadiak or the Aleutian tribes; these people travel a great deal by land and the women must pack.

As they live in their settlements, we find them distinguished by a peculiar style of architecture, which will be met with nowhere else. They build their permanent dwellings or one-story houses with logs. These logs are so fashioned that the under side of the superincumbent one is always hollowed so as to fit down tight, almost air and water tight, upon the natural round surface of the nether timber. Some of these houses are as large as 20 feet square, generally from 10 to 15 feet. They have regular rafters, with a pitch to the roof sufficient to shed rain and melting snow from the spruce-bark roof. A fire-place is reserved for the center, with a small aperture directly above it in the roof. The door to this structure is a low square hole at one end, large enough to admit a crouching person. It is stopped by a bear skin, usually hung over it. The floor is natural earth, while around the sides—one or two sides—of the room a rude staging is erected a foot or two from the ground, and wide enough for two persons to extend themselves side by side in bed. Upon this staging they lay grass mats and skins; in fact, it is a catch-all for everything.

Their culinary utensils to-day are made up of iron and copper kettles. Many of them have a tea set, cups and saucers, and a few old Russian "samovars" may be found among them. They use tea in a moderate quantity; sugar, flour, hard bread being the principal articles which they look to the trader for their dietary.

They have another peculiarity manifested by those among them who are chiefs or wealthy burghers, in the form of queer little wings or small box-like additions, tightly framed and put together, and joined on to the houses, and an entrance from it directly into the room being cut through the log frame. These little additions are used as sleeping apartments. They are furnished with the luxury of a rough plank floor and a little bladder-plate window in many instances. These are considered reserved and special apartments on occasions when a visit of ceremony is paid to them. They are their parlors or drawing rooms, in fact. Their idea in these tight little dormitories is to have them so snug and warm that they may sleep therein without any burdensome covering, in many cases without any clothing on at all. This is a great luxury. The usual furniture which we find in the Kenai house consists of these bed frames, and now and then a few blocks, or seats of that character, in lieu of chairs. They have boxes, most of them—store-boxes; and a late introduction, which has spread with great rapidity, and is universally liked by them and all the people of their character in Northern Alaska, is the traders' miniature imitation of a Saratoga trunk, a box somewhat smaller than the genuine article, but faithfully duplicated in its contour, and supplied with a lock and key. This will be found now in almost every house. They put their valuables into them, such as charms, toys for their children, flashy handkerchiefs, small tools fashioned out of bits of iron and steel, bags of sinews, thread, needles, lead, and percussion caps, the latter being to them pearls without price—nothing so precious. At their meals, and in living together, they do not differ much from the usual habit and manner of Indians proper, and familiar to us for the reason of repeated description and observation published and made of our own savage tribes living near by us.

The men are in their disposition much more taciturn than their western neighbors, but they are ardent hunters, spending most of their time and energy in the chase on land, where the fur-bearing animals peculiar to their country are numerous, varied, and valuable. They make journeys, long journeys, into the interior, up and through mountain defiles, and build on the tracks of their travel, at intervals here and there, houses

of refuge and shelter, in which they live with their families sometimes the major portion of the year. These shelters, or sheds rather, wide open at one side, are fashioned rudely of logs thatched with bark, and sometimes two camps will join together and close the open faces of their sheds, nearly joining, so as to leave merely room enough for a passage and a fire-place between them.

These people build birch-bark canoes with which to navigate the numerous swift and brawling rivers in their Territory, and they go down to the seaboard, buy skin canoes of the Kadiak pattern, and navigate to some extent on salt water, in quest of fish, in this manner.

In this connection we wish to call attention to the fact that these people do not make in any form whatever wooden canoes; for that matter the explorer will find no wooden canoes north of Mount Saint Elias in this whole region.

They are expert fishermen, and they certainly enjoy an abundance of piscatorial food, salmon of fine size and quality running up their rivers, trout in the thousand and one lakes of their country, finding them there all through the winter, fishing through the ice; and with a certain degree of contempt for the salt water, which is the treasure-trove and life-trust of the Kadiaker and the Aleutian, they spend no time there unless the steamboat-puffing of an approaching school of white whales attracts their cupidity and supplies them with a rare feast. These animals (the "beluga,") are found here running up some of their river squite a distance.

The variety of the mammalian resources extended by nature to these inhabitants of the Kenai district is, as we have said, very great. Bears, brown and black, the former of great size and ferocity, the skins 10 and 12 feet in length, strongly suggestive of the grizzly itself (if it may not be), are brought in by the hunters every year. The deer, which they find, are the large cousins of the reindeer, the woodland caribou. They get specimens of the mountain sheep (*ovis montana*), though the hair is surprisingly long and coarse, perhaps indicating another variety of the genus. They trap beaver, the land otter, porcupine, the "siffleur" or whistling marmot, wolves (the large gray), the lynx, the wolverine, the marten, a few mink, muskrat, and last, though not least, the ermine. Of wild fowl they have the grouse—both the white ptarmigan, so called, and ruffled grouse; wild geese are very plenty, ducks, and the great sand-hill crane, together with the frequent presence of the northern "buccinator" or great white swan. The natives, however, regard these swans of poetry with rather practical eyes, as they fill their larders, while the skin, with the down attached, is highly prized for its non-conductive qualities.

Of berries and roots they make a selection in the jungles and thickets and on the hillsides, of whortleberries, salmon and gooseberries, a kind of small raspberry, and fine cranberries in great plenty, which they mix in with their fish oil.

The skins of animals and the breast of many birds are used in trade, and to clothe themselves, for they seldom wear anything except such outer garments unless a chief or some wealthy head of a family sports a cloak, or something of that kind, over his skin costume—no San Francisco fashions here. What they perhaps crave most from the trader are lead, percussion-caps, good rifles, tobacco and calico. Another point in this connection may be made: these Indians are not "blanket Indians;" rare examples only occur of this covering being used as a garment or even found in their possession.

We pass now from this sketch of the pure or primitive Kenai people

to those who have become civilized by the influence of the church and long association with the Russians. They are living mainly on the eastern coast of Cook's Inlet, and are found between Cape Elizabeth and the settlement of Kenai, including that place. Here they have become so much modified and ameliorated in their tastes and disposition that, were it not for their language, we might take them to be quite another people; it is superficial, however, for they are the same, but living and dressing very much after the fashion, or wholly so, which we have set forth as peculiar to and characteristic of the Kadiak Christians.

An enumeration of the villages and settlements is now in order, and those we find on the coast of Cook's Inlet are as follows:

Alexandrovsk at Port Chatham, and near the site of the old Russian coal mines, is a settlement of 38 sea-otter hunters, who are mixed natives. They are living in a few log-houses, with a chapel.

From that point due northward we locate another settlement called Seldovia, of 68 Kodiak natives and Creoles. They are sea-otter hunters and live here in log-houses, and have a small chapel.

Thence again to the northward on the opposite side of the Chugachik Gulf, near Anchor Point, is the village of Laida, where there are 78 Kenai people, who are all sea-otter hunters, and are the only ones of their race who are, with the exception of a few on the west side of the inlet. They do not get a great many, however.

A short distance again from this point on up along the sea coast, at a point incorrectly marked, on the Coast Survey map, Fort George or Munina, is the settlement of Niniltchik, where 30 people, Russians and Creoles only, descendants of the old colonial citizens, are the first families of the country. There are only four families living in four houses. They are essentially a pastoral people, cultivating gardens of potatoes and excellent turnips, rare and juicy; and watching over a small herd of cattle—and they actually make butter. They also raise pigs and keep poultry, but on account of the hogs running on the sea shore, and the chickens scratching there also, both their poultry and pork are fishy. A little river runs by them from the interior to the inlet here, at the mouth of which is a sand spit, or bar, of considerable width, through which the water is literally filtered into the sea. There has been, of course, an open communication in time not very remote, and the salmon which then ran up on their mission of reproduction annually are still determined to run now; in consequence of this instinctive effort during those seasons when these fish are running they actually leap out onto this dry bar—many of them on and over in a succession of spasmodic wriggling efforts until they reach the river itself, and continue their errand. The people in the mean time have nothing to do save to walk down to the bar and gather up their choice and selection of these fish, which have voluntarily landed themselves, as it were, at their feet, or surrendered themselves into their hands.

From this interesting point we pass on again north, up the coast to Kassilov, situated a little to the southward of the river of the same name. Here is a community of 59 Kenai people living in log-houses. At the mouth of this river are the ruined foundations of an old Russian trading-post which was called "Saint George" from the name of the vessel that landed there with the colonists.

These people, as well as all those we have just cited, enjoy contiguity to an abundance of standing timber, and never suffer for want of fuel. The river itself is quite a resort during the salmon season for Kadiak fishermen, who come up here, as it is an easy matter to secure these fine fish in its waters.

Again to the northward, almost to Kenai, is a small village called Chinila, an insignificant hamlet of 15 souls, living in a log-house or two.

Thence to Kenai, where we find a village called Chkituk, of 68 Kenai natives and a few Creoles. The mission church of this district is also situated here, the unhappy priest last in charge of which was unfortunately shot a year or two ago, while out hunting, by his native auxiliary, who in his excitement and zeal forgot the nice distinction existing between a missionary and a bear.

As might be inferred from this slight digression, the people are hunters going back into the interior for their quarry—bears, wolves, deer, &c. They make an annual trip or excursion over to Kalgin Island in the straits opposite, where they get a considerable number of hair seals.

There is here a vast moor or level bog abounding in lakes or sloughs, lying between them and the mountains back from the coast to the inlet. This locality and immediate neighborhood was the site of an old Russian trading-post in early times. The bluff on which this first post was built over the river has been nearly all washed away, and a few timbers protrude from the shelving banks. Here it is interesting to note, was the site of an old Russian brick-yard where these materials were put into shape for use throughout the territory, the principal object of which was to set up and endow the trading-post with the Russian oven or "petchka." This clay bank is the only one that the Russians could find in the territory fit for the purpose of fire and brick, the clay at Kadiak and elsewhere being so permeated with salts and soda as to be unfit for the purpose.

After the transfer of the Territory to our hands, and during the period when the American notion was prevalent in this country that it was necessary to patrol Alaska with soldiers to protect the people, one of the several detachments of troops which were ordered into this country was located here, and they have left traces which still endure since they abandoned the post in 1870.

We have referred to the fact, and laid some stress on it, that these people of Kenai are Christians. They are so, with one or two exceptional exhibtitions, however, of a relapse to their faith in savage Shamanism. Of this we were strongly and disagreeably impressed by the following occurrence, which we witnessed. A Kenai native came to us one afternoon when we were here, and asked us to come down to his hut, where he said that they were "going to have a good time"—some fun in fact. Curious to know what this man intended we accepted his invitation, and on repairing to the place found a woman lying in the last moments of earthly existence—his sister—while her husband stood in the doorway of the house loading and firing his gun, shouting between the discharges at the top of his voice, accompanied by a chorus of yells, gestures, and numerous other indescribable motions and noises. His neighbors joined him to soothe and comfort his wife's dissolution. There may have been feeling here such as we would expect to find characteristic of sorrow and grief, but, if there was, it was impossible for us to detect it anywhere in that assemblage. They told us afterwards, however, that this exhibition of great bravery and shooting in the air, and shouting, storming, and stamping around the death-bed, was to secure the way and drive out the evil spirits which they supposed were waiting without, eager to seize the soul of the expiring woman.

We now turn to a review of the wild Kenai people, the first village or settlement of which we find directly back in the interior about a hundred miles, on a stream emptying into Skilakh Lake. Here is a village

of 100 Indians, who are living in the log houses of the country. They are easy, shiftless, happy go-lucky hunters. Their great staple is beaver and marten.

From here we go back to the coast and up the inlet, to Nikishka, a short distance below East Foreland, where there is another village, of 138 people. They also are hunters.

From Nikishka we pass along the mouth to the Kinnick River, where we pass a settlement of 254, in three villages. These people of Kinnick in olden time, and even to the transfer of the Territory, have conserved and claimed the profits of middle-men, or commission merchants, in the trade which the Indians of the far interior brought down to the coast before the development of the trade on the Yukon; but now the opening of the Yukon and the Tannanah Rivers draws its own legitimate current in that direction, and these people have no more emolument from it.

The next congregation of these people we meet with directly to the westward, on and up the valley of Sushetno River. Here is a large aggregation of the Kenai Indians—146 of them—who are living in small scattered settlements everywhere from the mouth of the river to a long distance up the valley, and when they come in contact with the white traders they meet them at North Foreland, or Toyonok, down the inlet, some little distance, on the mainland. They range here, hunting the animals which we have enumerated before in some detail. Their savage neighbors west of them and right over the Chigmit range, the lofty snow-white peaks of which form an insuperable boundary and a very safe one, say, without any affectation of charity, that the Kenaïtzi know no fear and are deadly foes. It amuses us, therefore, not a little when among the Kenai Indians to hear them say that the Innuits were brave and reckless in facing death; they, too, know no fear; they were dreadful people, cannibals, &c., and thus we find two savage races, separated by a natural barrier, who have resolved themselves, as it were, into a mutual admiration society, in which their hate is only equaled by the fervor of their protestations of respect.

The Kenai people, with whom we have closed at Toyonok an enumeration of their numbers and location, live perhaps in the most romantic and picturesque portion of the Territory. Burning volcanoes smoking and grumbling, a great inland sea, rolling for miles and miles therein, lies at their feet; great plains, moors, and lakes, timber, and tundra. They have, perhaps, in this respect the most striking natural scenery in Alaska. It is also interesting to notice the rather abrupt lines which exist, as it were, so strongly defined, between the Indians of Cook's Inlet and the Innuits of Bristol Bay. There is no breaking down of the division, although it can be passed by an active man in a single hour.

Population of Kenai Mission, Cook's Inlet.

Villages.	Whites.		Creoles.		Kodiak Innuits.		Kenaïtze.		Total.
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
Alexandrovsk	1	.....	4	4	13	17	.....	.....	39
Seldovia	2	.....	1	2	38	30	.....	.....	73
Laïda	.....	.....	.....	.....	.....	.....	40	38	78
Niniltchik	.....	.....	16	14	.....	.....	.....	.....	30
Kassilov	.....	.....	.....	.....	.....	.....	30	29	59
Chinila	.....	.....	.....	.....	.....	.....	7	8	15
Chkituk	.....	.....	2	3	.....	.....	38	30	73
Kenaï Station	2	.....	1	7	.....	.....	.....	.....	10
Skilakh	.....	.....	.....	.....	.....	.....	48	52	100
Nikishka	.....	.....	.....	.....	.....	.....	37	31	68
Kinnik	2	.....	.....	.....	.....	.....	138	116	256
Sushetno	.....	.....	.....	.....	.....	.....	78	68	146
Toyonok	2	.....	3	7	.....	.....	12	13	37
	9		27	37	51	47	428	385	984

CHAPTER IV.

THE GREAT INNUIT PEOPLE.

THE BRISTOL BAY SUBDIVISION.

In portraying the physique, physiognomy, and disposition of these people whom we first encountered in the Kadiaks, we find in the common Innuit a man who stands a little below the average height of the Anglo-Saxon race, namely, 5 feet 6 or 7 inches. These are Eskimos, strictly speaking, only possessing this marked difference from their brethren who are confined to the ice-bound coasts of the Arctic and north of Bering Straits by being taller and more shapely, a climatic modification, undoubtedly, and nothing else. The Innuits possess a fair skin, slightly Mongolian in complexion. They have a rather broad face, prominent cheek bones, large mouth with full lips; small black eyes, set rather prominently in their sockets, almost on a line with the bridge of their insignificant and much depressed noses, although there are tribes in this subdivision of the Alaskan people who have straight, prominent noses, and who, if they were dressed and barbered in San Francisco, might pass up the streets as Anglo-Saxons. They have the customary abundance of coarse, black hair, which the men up to the age of thirty years usually keep shingled close to the scalp. After this period in life it is allowed to grow as it will, and is worn by them in ragged, unkempt locks, hanging as they may. They have in many instances remarkably well-developed beards and always a moustache; every young man is as proud of its possession as his Caucasian brethren. They have shapely hands and feet, limbs well proportioned and duly muscled. The women, as is customary in proportionate stature among the human race, are smaller than the males, and when young some of them are fair and comely. The skin of their cheeks is frequently suffused with attractive color, not artificial, lips pouting and red, and hands and feet are small and very well shaped. They seldom pierce their lips or disfigure their noses. They lavish upon their children a wealth of affectionate atten-

tion, endowing them with all of their ornaments, piercing the noses and the ears of infants, into which they insert ivory and silver ornaments, strings of beads, &c., but as the child grows up to either man's or woman's estate these attractions are removed and never returned to the vacant orifices in these organs. The women allow their hair to grow to its full length, part it in the middle and gather it up into thick braids, or else it is confined in ropes or cables, as it were, by lashings of copper wire, sinews, &c. They seldom tattoo their faces in any shape whatever; the only work of this kind that is done is the drawing of some faint, transverse blue lines under the lower lip and on the chins of the married women.

These people, in dressing, use the primitive garments of their ancestors to-day as a rule; the only exceptions are a few individuals living constantly about the scattered trading posts, and about the missions in their Territory. The conventional coat of the Innuit is the "parka," with sleeves, and compassing the body without an opening either before or behind from the wearer's neck to his feet, the head being thrust through an aperture left for it, fitting snugly around the neck, and in the winter compassed with the cowl or hood. This "parka" is worn with a singular ease and abandon; frequently the arms are withdrawn from the sleeves and pulled up within and under, allowing these appendages to dangle. As they sit down, they draw the "parka" about and over their knees, with the hands, in turn, around them underneath; or else, when the native is on the trail and moving, the "parka" is gathered up around and about his ankles, to which it reaches, and bound as high as his knees by a leather or sinew girdle around the waist, the folds of the "parka" dropping in clumsy effect over the frequently highly ornamented girdles. These "parkas" are made of skins of animals, and, in rare instances, the breast skins of birds. The most favored and valuable perhaps are the reindeer styles for winter use, while the summer "parka" is a lighter one, made of the marmot and mink skins. The hood about their heads is only attached to the winter "parka"; it is a capacious pouch, which, when not in use, lies in thick folds back of the head and on the shoulders, ornamented in various ways, but usually with a thick fringe of dog-skin hair, which, when drawn into position, encircles the wearer's face, giving him a wild and unkempt appearance.

The leg-covering of both male and female consists of either skin or cotton drill trowsers, which are puckered at the ankles, and bound about with the uppers of their moccasins (where they wear moccasins), or else inclosed by the tops of their reindeer boots, which are the prevalent covering for the feet. Their underwear is limited to that garment, or apology for a garment among them, which we call a shirt, made also of light skins or cotton goods; if it is made of skin (dried skin) it becomes an heirloom in the family, highly polished and redolent of the national Innuit odor.

Their places of residence may be described as follows: The Innuit house is, in outward appearance, a circular mound of earth, grass-grown and littered with all sorts of Innuit furniture; a small spiral coil of smoke running up from the apex; a dog or two crouched upon it; children climbing up and down upon it or rolling down; stray tit-bits left from one meal until the next shall be in order. An entrance to this house is a low, irregular, square aperture (it cannot be called a door), through which the owner stoops and passes down a foot or two through a short, low passage on to the earthen floor within, where an irregularly-shaped circle or square 12, 15, or 20 feet in diameter, as the case may be, is found, and in which the only light from heaven comes from the small

smoke-opening at the apex of the roof, which rises tent-like from the floor, the fire-place directly in the center. The rude beds or couches are of skins and grass mats laid upon clumsy frames slightly elevated above the floor, small logs and saplings, rough-hewn planks, and sometimes mere platforms built up of peat or sod. In many instances a small hall-way, with a decided bulge amidships, is erected over these entrances, where, by this expansion, room is afforded in which to shelter their utensils, water-vessels, &c., and in which the everlasting dogs congregate.

Immediately contiguous or close by most of the houses will be found a small summer kitchen or cook-house fashioned in very much the same shape and style as is the residence itself, only it is not excavated under ground, and is but 5 or 6 feet in diameter; it is also rendered offensive to our senses by being the inevitable dog rendezvous.

We have here to note, in speaking of the dogs, the omnipresent canine in this country, the remarkable distinction which exists between the method of dog handling in this country and that haracteristic of the Kenai people and those of Kadiak. For example, the Innuit always makes his dogs beasts of draught; they are harnessed and made to drag sleds and canoes; the native of Kadiak seldom harnesses up his dogs, while the Kenaitze, endowed with a great abundance of dog life in their villages, use them almost entirely on the bear trails, and the like, dragging with their own hands sleds laden with their paraphernalia and supplies. Perhaps two or three exceptions to this rule may be found. The dogs are the same in every instance. The people of Kadiak have few sleds, or rather they have no use for them, but those of the Kenai country do use them as much as do the Innuits, but dragging and pushing them as they travel.

The dietary of the Innuit, with reference to what he purchases from the traders, embraces a modicum of small supplies of tea and sugar, the coarse Graham flour, and a few crackers. This flour is made up by them into pancakes fried in oil, and is about the only staple in our line of groceries that they value; they also boil it into a thin hasty-pudding or mush, using no salt whatsoever in anything that they eat.

Their natural food supplies are large and varied. They have reindeer meat, the flesh of moose, bears, and all the smaller fur-bearing animals peculiar to that region, of which there are quite a number, viz: the land-otter; foxes, red, cross, and black; the mink, marten, marmot, and the ground-squirrel, or "evrashka," which is the most plentiful of the two. The bears are all brown—no black bears are found here; wolves, the large white and grey and the smaller white wolf on the mainland, while on the coast they secure the walrus, male and female; the large maklak seal (*Phoca barbata*), and the hair seal (*P. vitulina*).

They have a great abundance of water-fowl, such as geese and ducks, and the small waders. In addition to the above, they occasionally secure a "beluga," or white whale, and at still more rare intervals, which perhaps enhances the glory of the feast, they kill a stranded whale.

The oil of marine mammals they carefully treasure up, bottling it, as it were, in seal-skin vessels or bags, which are placed on a frame cache, high above the reach of dogs, adjoining the house. This oil, like the scriptural wine, can never be put into old bottles; it is greatly too strong to be compassed by any transfer whatever.

The fish oil serves a threefold purpose—it answers for food, for fuel, for light, and is a luxurious skin and hair dressing among them. Of fish they enjoy the greatest abundance, and a fair variety; salmon in all the thousand and one lakes and sluggish streams leading from them,

to the great run of the same fish in the mighty rivers of their land. Of the Pelagic fish at their command we may mention a very small list; the great shoals of Bristol Bay and Nushegak ward out and fend out, as it were, the approach of the deep-sea fishes to their coast; but of the lake or fresh-water forms we find quite a number of the salmoid white-fish in the large rivers, and its smaller forms in their lakes and lakelets, trout and salmoid trout, a number of cotoids, and quite a number of less important species rather local in their distribution.

An evidence of the dissimilarity of taste, even in a savage life, is very well exemplified here by the disdain these people have to fresh fish, not that they do not eat them when first caught, but that they prefer them buried for a while under ground until that process which we call decay gains great headway. Their exquisite epicurean sense in this respect has often driven the writer from the completion of his meal, even when sore pressed by hunger.

In their cookery and cooking we find them using iron and copper kettles. They boil or stew almost everything. In those houses wherever they can afford to use tea, a small supply of earthenware cups and saucers in a little cupboard will be found; but they make no pretenses toward setting a table, save those few who live about the missions and trading posts before alluded to, where they do boil the "Samovar" (tea-urn) and spread a cloth over the top of a large box, or rude table, perhaps, on which to set their tea-cups.

The natives are hunters and fishermen. The land animals to which we have made allusion are pursued by them at the proper seasons of the year, and a small revenue is also derived by them from the marine fauna, principally in the shape of oil and walrus ivory.

They also have earned the reputation of being the sculptors of the North. Their carvings in ivory are exceedingly curious, skillful, and in many instances very attractive. The patience and fidelity with which they cut out from walrus teeth delicate patterns furnished them by the traders closely approach those manifested and so much admired by us in the Chinese. Time to them is evidently of no moment. A considerable revenue is derived from this occupation among them.

In hunting, with the exception of some fish-spearing and bird-lancing, they employ fire-arms of the modern patterns, though considerable numbers of them to the westward of Bristol Bay still employ the primitive spear and lance for seal and land mammals.

The disposition of the Innuit people is one of great independence, without being taciturn or vindictive; they are light-hearted, enjoy conversation among themselves, telling jokes with great gusto, singing songs with much animation—less music and better time—dancing with exceeding exhilaration during the progress of their games and feast days.

The Innuits are, as a people, savages, not Christians; those who are being marked exceptions to the rule. The fact that the Russian priests have not subverted more of these people to their church is no proof whatever that the priests aforesaid have been laggard in their attempts; it is owing, perhaps, chiefly to a misconception of the Innuit chaeacter.

They are a brave people and have fought with great energy and frequent success for their right of way into the Territory. The Koltchanes, or Ingaliks, of the interior, who disputed this privilege with them, brave as they are themselves, bear cheerful witness to this fact; but all this only comes to us in legends of ancient times. No trace of recent wars can be found among them.

There is not much evidence of their power or appreciation of music,

were they cultivated, beyond the beating of perfect time to tunes and melodies. They have, in a few instances, secured musical instruments like the concertina, or accordeon, upon which they made some progress, but there is little or nothing of the kind to be heard in the Bristol Bay country. The Innuit song is essentially the Indian song—a weird dirge, monotonous in the extreme, accompanied by regular and rhythmic beating of a rude drum or stick. Some of the native Innuit songs, when rendered intelligible to us, have a plaintive pathos running through their simple composition quite attractive, but such songs are infrequent, the majority being a boastful recital of the singer's achievements on land and water.

Their rude mythology, or rather daimonology, seems to fill the measure of their minds to the exclusion of Christian doctrines, if not their comprehension.

They are living, as a whole, free from kvass or whisky until those tribes are reached bordering on Kotzebue Sound and Bering Straits, where the civilized influence of our whalemen is exerted upon them and the demoralizing orgies of intoxication prevail.

With this brief yet salient mention of their leading characteristics we now turn to a succinct enumeration of the numerous tribes and subtribes of this great branch of Alaska population, beginning with the Bristol Bay district or Nushegak Mission of the Russian Church.

The first introduction which we have to these people is met with as we cross the divide from Katmai, in a little village on the Mukshat River, which empties into Lake Walker, where there is a settlement of 162 souls living in aboriginal simplicity at their village, which they call Ikkhagmute. They have a chapel here. They are Innuits, but all their business in trade goes to Katmai.

As an illustration of the fervor and indifference to physical hardship characteristic of these people, an old man of this settlement, the keeper of the church, walked in company with the writer over to Katmai—a four days' journey through rugged defiles, fording seven rapid mountain streams, waist deep every one of them, exposed to inclement weather—for the purpose of purchasing fifty cents' worth of nails with which to fasten the door of his church. If this is not a shining example of self-denial and self-abnegation for a trivial service in behalf of his charge, then it is a difficult matter to discount it by parallelism among our own people.

From the Lake Walker settlement, or Severnovsky Village, we pass to the outlet of the lake, the Naknek River, at the mouth of which we find the village of Paugwik. This pass, or portage, from the North Pacific to Bristol Bay and Bering Sea is one that usually requires from three to seven days, according to the weather. It will give to the traveler a lasting impression and a correct idea of the Alaskan Peninsula, seeing as he travels from Katmai to the bay all the phases of the country. The numerous and strikingly beautiul land-locked lakes may typify in Lake Walker, where abrupt mountains rear themselves to Alpine heights, falling in steep succession to the lake shores, wherein the clear waters mirror them back again. Grassy slopes reach out on which thickets and clumps of graceful birch and poplar nod and waive their tremulous foliage as the wild gusts sweep ever and anon over them from the funnel-like passes of the mountains.

The timber on the hill slopes is also of birch and poplar principally, but the rolling uplands themselves are covered with a monotonous spruce. The immediate banks of the river through which this crystal lake discharges its surplus water are low, flat, and covered with a luxuriant

growth of bushes, grasses, and amphibious plants, semi-tropical in their luxuriance and vigor of growth, but everywhere that the foot goes down it is moist, damp, even to swamp.

At the débouchure of the Naknek River we find the vestiges of the first settlement, Taugwik, which was destroyed in 1839; and the deserted site to-day is marked by the presence of the crosses and gravesticks, showing that it must have been a very large and populous village; and right there in this cemetery the present descendants, living in an adjoining village, have excavated their salmon-holes where they keep the fish-heads until they become gamy.

The present settlement consists of two sections, Kenigayat and Kennuyak, on opposite sides of the river, and at its mouth, of 192 inhabitants, all living in barrabaras (such as we have described as peculiar to the Innuit race), and a chapel.

The wife of the chief of that settlement is the daughter of that celebrated old Russian trader and explorer in this country, Kolmakov, who opened the Nushegak and Kuskokvim Rivers to Russian trade and influence.

From this point we turn immediately down the coast as far as Igagik, where we find a settlement of 118 souls, living in the customary manner, and principally devoted to the chase of the walrus, at the mouth of the Igagik River, which is the principal route of portage across the peninsula, where the travelers are heavily burdened. They also have a chapel here.

From this point we again turn to the southward as far as the mouth of the Sulima River, where we find the settlement of Oogashik, which is a purely Aleutian colony of 125 souls, devoted entirely to the walrus capture and trade. There is a chapel here.

About fifty miles from that location, to the southward, is another Aleutian village, at Cape Stroganov, called Oonongashik, where there are 37 people.

Again to the southward and westward some distance, down to Port Moller, is the village of Mashik, a settlement of 40 Aleuts. They are walrus hunters to the exclusion of everything else. This is the extreme western limit, adjoining, as it does, directly upon the Belkovsky Parish, and we return from our starting point in Bristol Bay, at the mouth of the Naknek River, from whence we proceed on and up to the extreme head of Bristol Bay, over a succession of shoals and sand bars, to the settlement of Kaggiung, where we note the existence of 86 souls, who reside in their peculiar barrabaras, with a small chapel.

From this settlement, at the mouth of the Kvichak River, a deep and rapid stream, up to its source in the great Lake of Iliamna, where we again find, near by, another aggregate of 119 people living in a settlement called Kaskinakh. We are here on the shores of the largest freshwater lake known in the Territory of Alaska—an inland sea over 90 miles in its greatest length, varying in width from 15 to 30 miles. It is large enough for the wind to play upon and raise a sea that rolls with surf-like beating on its pebbly shores. At the eastern head and side it is barred out from the North Pacific by the abrupt and mighty wall of Alpine peaks of the Iliamna range, hills and spurs of which reach down to the westward in sloping, rolling ridges, covered with a timber such as we have described at Lake Walker. The natives have a legend of what, to them, is a very remarkable natural phenomenon. They say that a species of seal lives in this lake not known to the sea. If this be true, it is paralleled by the "Baikal" seal of Siberia (*P. sibrica*). We were unable, however, to see or to procure a specimen.

From Kaskinakh again to the eastward and along the shore of the lake some 15 or 20 miles is the small village of Chikak, located on a little islet closely hugging the shore, containing 51 souls. This insignificant hamlet possesses the traces of an old Russian stockade or post, of which, however, the natives themselves have no definite knowlege, though they simply aver that it is the wreck of Russian enterprise.

Thence again on to the eastward, about 15 or 20 miles, we reach another settlement on the shore of the lake called Iliamna, where 49 natives live. These people, as do all the natives living on this lake, reside in log houses resembling those of the Kenai people, but, although the church authorities have habitually classified them as Kenai people, they are not such, speaking only the language of the Innuit. In 1796 the first Russian missionary in this country met with his death at one of these three villages—which, we cannot definitely point out. Father Juvenal was the unfortunate man who perhaps, in his religious fervor, clashed fatally with the Shamanism of these people.

From Iliamna a single day's journey up the coast of the lake brings us to the lonely house of a man much noted in these parts, named Rikhterov, a Creole of gigantic stature, who married a woman of the country, and who reared four Anakim sons, who are, like himself, mighty hunters and of great physical powers. The family lives all to itself here, a little back from the lake on the mountain side, commanding a pass over the divide to Cook's Inlet. They control the trade of Iliamna Lake.

From this point the solitude of the lake is not disturbed until we reach its extreme head and pass over a small stream or portage of five or six miles into a lakelet, on which there is a village called Keechik, of 91 souls. These people bear the reputation of being true Kenaitze.

This completes the circuit of the inhabited points on the lake, and we return as we came to Bristol Bay, passing along its northern shores along Etolin Point up to the northward until we reach a hamlet called Eekuk, of 112 natives, perched on the summit and at the brink of a high bluff overlooking the sound, where they are living in Innuit huts, with a large "Kashima" or public dance and council house in the center. The writer remembers the place by the recollection of a very summary serving of attention upon him. A driving gale of wind accompanied by pelting rain was in full fury when he landed there, and his endeavors to pitch his tent in the tempest so aroused these people that they rushed down from their huts to the beach below where he was. Four men seized him—he knows not how many seized his tent and baggage—but up the steep ascent they pushed and pulled him into their dance-house, where they began to set up his tent just as he was trying to set it outside, and spread his goods in order about him. Then, with smiles of intense satisfaction, they arranged themselves in a hollow square (but circular) and feasted their eyes on his strange person and possessions. Their attention and care, manifested by pitching the tent inside their house, soon proved to be not a superficial act of courtesy, for the howling storm without so beat upon the roof that it leaked like a sieve before the night was over.

From this settlement it is only a short distance directly to the northward and up the Nushegak River to the village of that name, also known as Fort Alexander. This was the initial point of Russian influence. It was founded by Kolmakov in 1834, who afterwards found his way up the Nushegak River, and on and over to the Kuskokvim in the northward, where he built the redoubt, that bears his name to-day, in 1839. A monument to his memory, a simple cylindrical shaft of 15 or 20 feet high surmounted with a wooden globe, stands on a terrace overlooking the

village below, where there are 178 Creoles and natives. They are living in barrabaras and log houses. There is a mission here and a church. The settlement stands upon the abrupt slopes of a steep hillside which rises from the river, planted on a succession of three terraces, one immediately behind the other. Communication from flat to flat is effected by slippery wooden stairways. Struck by the danger of going out by nightfall to see a neighbor from the terrace above, the writer asked the old priest how they accomplished a social visit during the winter. Whereupon the philosopher shrugged his shoulders and said, "Ah, we don't go out"; and then muttering with a subdued wink of his eye, "You know the deacon must come to me then."

The Nushegak River, which will occupy our attention now for an extended journey, is, at its mouth, a broad arm or estuary of the sea, abounding in shoals and flats with bars that try the temper of the best navigators. In this connection a reference to the peculiar violence and power of the tide may be in order. It runs over at certain turns of its ebb and flow with the same tide rip-wave or "boar" as is described in the Bay of Fundy. The current of the river itself can be detected for a long distance out into the brackish water, easily marked in its period of high water by the turbid current. The river itself, when beyond the influence of the sea, is a stream that averages for a long distance up half a mile in width, gradually narrowing its banks to its source in Nushegak Lake. It is generally deep, with successions of bars and ripples, until the northern bend is reached, when these become more frequent, making the current rapid and brawling. The water is usually turbid, charged with sediment gathered entirely from the banks of the lower part of the river, and, like the great Missouri of our own land, is at its headwaters clear, but defiled below. Considerable quantities of drift-wood are constantly borne down on its current to the gulf, and its banks are timbered, and the country back from it, which in itself prepossesses the traveler with the idea that something can be made out of it, because it is the only firm land compassing any stream of magnitude in its entire length that we find in this country.

The timber lying on it runs down to the sea on its right or western bank, while on the left it does not reach Port Alexander, some slight difference in the soil perhaps making the discrepancy.

We find lining its banks a number of settlements in order as follows: First, opposite Nushegak is the hamlet Anaknak, with a population of 87, living in the customary Innuit barrabaras. Then again, on up the river on its eastern bank two miles above, is the village of Kanoolik, with 142 souls.

From this point away on and up the river the next place is Kakuak, on the western bank, where 104 inhabitants are located.

Thence again on the same shore is the village of Akulwikchuck, with 72 souls, and on up about 20 miles is the village of Agivivak, with 52 people.

From here on again and up to the junction of the Malchatnah River, an inconsiderable stream joins it from the north. The Nushegak River here makes an abrupt turn to the westward, deflected at right angles from its northerly course, as we have followed it up.

From this junction we pass to the next settlement of Kalignak on the south bank, consisting of 91 inhabitants; thence to the source of the river in the Nushegak Lake, we find no further trace of settled people until we make a small portage to Tikchik Lake, which lies on the Kuskokvim route or portage. Here is a village of 38 people. To the southward of Nushegak Lake a little distance is another body of fresh water

called Akooyukhpak, where another hamlet of 83 inhabitants is located. This lake empties into Bristol Bay through an outlet called the Knagnack.

The Malchatna River, to which we have referred, has a roving population on it of 180 souls. They have no fixed place of abode, moving up and down the valley as they hunt and fish.

This carries us down to the sea, along the coast of which we proceed to the mouth of the Igushek River, an inconsiderable stream, up which we go, following its tortuous, sinuous course to the Innuit village of the same name, where 74 of these people are living. They roam over that peninsula, ending in Cape Constantine, during the summer. This little stream possesses the enviable reputation of winding itself to such an extent that a person is three days in traversing its course, 30 miles in an air-line from the sea-coast, as he goes down to tide-water; and we know it to be so, heightened by the unhappy reflection that though we were so near apparently to food supplies, yet we were so far in reality when our own larder was exhausted. This portage of Igushek we also remember from the fact that when we made the journey, in the latter part of September, we passed through a charnel-house, so to speak, of the salmon family. Every bar and all the shoals were lined with the decaying and putrefying bodies of these fish, which lay in winrows, as it were, a foot or so deep; while every overhanging bough, projecting rock, was festooned with the rotten bodies of these fish. It so impressed us, and so affected us, that, though we were entirely out of provisions, we did not feel the pangs of hunger there.

Making the portage which takes us over to Kulluk, we passed through two little lakes near the summit of the Divide, remarkable from the fact that girdling them are seen the last of the scanty groves of birch and poplar that we find anywhere near the coast going west. At Kulluk, which is right down on tide-water, is a population of 75. They are walrus and seal hunters to a great extent. They are living here in close contiguity to the walrus bars and spits, on which they find great herds of these animals; seal also are abundant, including the singular saddler seal (*Histriophoca fasciata*), so much sought after by collectors.

From Kulluk, around the point of that same name, and up the coast to Ooallikh Bay and settlement, is a distance of only about 30 miles, yet in traversing this space we rounded seven large headlands, made up of rocks, watered out, in many instances, to fantastic shapes and caverns. The faces of the mural bluffs are covered with screaming flocks of water-fowl. These points or capes, so deeply indented and so prominent in themselves, are not shown on the maps published under the auspices of the Coast Survey.

One remarkable weathering of a peculiar trap or sandstone rock struck us forcibly in calling to mind the Sphynx of Egypt. The settlement of Ooallikh consists of 68 people, who are seal hunters in part. We may say, in this connection, that we left the bidarka of the Aleut and Kadiaker behind us at Nushegak. Here the tribal boat is the "kiak," made of the skin of the "maklak," a large hair seal. It is always a one-hole bidarka, and never made, as the Aleuts invariably do, with two or three holes.

From Ooallikh we pass rapidly up the coast to Togiak station, where we find a small hamlet of 28 people, all told.

Then again a short distance up to the mouth of Togiak River, which is quite an important stream, is another settlement called Togiagamute, of 276 people.

We may preface our remarks on these people whom we are to enu-

merate, up the Togiak River, by stating one or two interesting facts in regard to them and their history. They may be called the Quakers of Alaska; they are the simplest and most unpretending of all her people; they seem to be entirely a law to themselves, living to themselves, and indifferent as to what other people may have and they have not. They seldom ever see a white man; their excuse for this, however, may be pertinent when we come to realize their possession of very inferior peltries. They have nothing but a few inferior mink and ground squirrels to trade. All up this river we will find them living as we shall specify presently, very numerous yet without any appearance of tribal authority or chieftainship. They have no chiefs; each family is a law to itself, and it comes and goes with a sort of free and easy abandon strongly suggestive of primitive man in all his purity. What little they want that they have not got they get from one another, and not being able to get it in that way they do not search for it beyond, unless it is small stores of tobacco which they get through other Indians second or third hand. Whole families of them leave their winter houses in the summer frequently, and go out to the points here and there as the fancy takes them, and pass two or three months there with no other shelter than that afforded by their upturned "kiaks." Were their climate Italian it would not seem to us so hardy, but when we remember the rain and the wind that are so frequent and so tempestuous, we are led to exclaim that their whole bodies must be as insensible to extreme heat or cold as their features are.

An odd feature of their living we also noticed, as they moved from place to place on the river. The men seated themselves in their "kiaks" with the children's heads just protruding from the hole back of them, and would pull and paddle their way up against the current, while the women—mothers, wives, and daughters were turned ashore and compelled to find their way up through the long grass and over bogs—to toil in this manner from camp to camp, singing at the top of their voices to keep bears away, that they might be apprised of their coming and decamp.

From the mouth of the river and the village which we have just cited, the next settlement we find as we ascend the stream is Ikaliukha, on the west bank, where there are 192 people.

Then again up on the opposite bank a short distance is Toniakhpuk, with a population of 137 souls.

Again up and on the west bank is Kassianmute, which is the largest of them all, embracing a citizenship of 615 souls, and possessing two "kashimas." This is the only village where two of these large dance or public houses can be found in this country.

From this we come to Nulahtuk, where 211 people live.

On the banks of a lake bed tributary of the river, above the junction on this stream proper, we find a short distance on the settlement of Kissiak, with 181 people.

Thence to a point near the head of this intersecting river is the last settlement, Anoogamok, with 214 inhabitants.

Though the course of this river is exceedingly limited in its length, yet the density of its population must surprise the explorer. The river itself, scarcely more than 100 miles in length, is, however, extraordinarily broad, being a mile and a half in width, shoal and shallow, however, with deep pools here and there. The valley through which it runs is broad and flat. The bottom lands of the river are quite extensive, widening out in some places 15 miles between the ridges and mountain purs that direct its course. They are covered with a growth of the

most luxuriant grass, high as the natives' heads and higher, literally concealing, as it were, the dense population of that region.

Great quantities of salmon in their season ascend this river, and in the winter time moose are said to feed through it.

Returning to our starting point on the Togiak, we pass down the coast to the sheltered shores of the mainland opposite Hagenmeister Island, where we find the last village in this subdivision as Aziagvigamute, with 130 souls. They are principally reindeer hunters and fishermen. Here the stream that meanders through the village is clear and rapid, full of trout. The hills are barren, and on them herds of reindeer may be seen feeding; the timber, such as it is—scattered clumps of birch and poplar—being found here and there along the banks of the little streams.

We passed through these settlements on the 7th of September, coming down over the Divide through a blinding snow storm, piercing cold, the snow being a foot deep at the sea level.

With this village our notice of the Bristol Bay or Nuslegak district closes, and we append a table of concise and succinct enumeration.

Population of Bristol Bay District.—Nushegak Mission.

Villages.	Whites.		Creoles.		Bristol Bay Innuits.		Togiak Innuits.		Aleuts.		Total.
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
Ikkhagmute	.....	.....	.....	.....	90	72	.....	.....	.....	.....	162
Paugwik (2 villages)	.....	.....	.....	.....	101	91	.....	.....	.....	.....	192
Igagik	.....	.....	.....	.....	56	62	.....	.....	.....	.....	118
Oogashik	.....	.....	.....	.....	.....	.....	.....	.....	130	115	245
Oonangashik	.....	.....	.....	.....	.....	.....	.....	.....	20	17	37
Mashikh	.....	.....	.....	.....	.....	.....	.....	.....	22	18	40
Koggiung	.....	.....	.....	.....	14	15	.....	.....	.....	.....	29
Kaskinakh	.....	.....	.....	.....	68	51	.....	.....	.....	.....	119
Chikak	.....	.....	.....	.....	25	26	.....	.....	.....	.....	51
Iliamna	.....	.....	.....	.....	29	20	.....	.....	.....	.....	49
Kichik	.....	.....	.....	.....	51	40	.....	.....	.....	.....	91
Ekuk	.....	.....	.....	.....	57	55	.....	.....	.....	.....	112
Nushegak	1	.....	50	36	42	49	.....	.....	.....	.....	178
Anagnak	.....	.....	.....	.....	48	39	.....	.....	.....	.....	87
Kanulik	.....	.....	.....	.....	76	66	.....	.....	.....	.....	142
Kakuak	.....	.....	.....	.....	54	50	.....	.....	.....	.....	104
Akulwikchuk	.....	.....	.....	.....	35	37	.....	.....	.....	.....	72
Agivivak	.....	.....	.....	.....	27	25	.....	.....	.....	.....	52
Kalignak	.....	.....	.....	.....	50	41	.....	.....	.....	.....	91
Moltchatna	.....	.....	.....	.....	92	88	.....	.....	.....	.....	180
Kuliukhpak	.....	.....	.....	.....	45	38	.....	.....	.....	.....	83
Vuikhtuligmute	.....	.....	.....	.....	27	24	.....	.....	.....	.....	51
Igushek	.....	.....	.....	.....	39	35	.....	.....	.....	.....	74
Kulluk	.....	.....	.....	.....	35	30	.....	.....	.....	.....	65
Ooallikh	.....	.....	.....	.....	37	31	.....	.....	.....	.....	68
Togiak Station	.....	.....	1	3	7	9	.....	.....	2	.....	22
Togiagamute	.....	.....	.....	.....	.....	.....	131	145	.....	.....	276
Ikaliukha	.....	.....	.....	.....	.....	.....	101	91	.....	.....	192
Tunniakhpuk	.....	.....	.....	.....	.....	.....	71	66	.....	.....	137
Kassianmute	.....	.....	.....	.....	.....	.....	299	316	.....	.....	615
Nulatok	.....	.....	.....	.....	.....	.....	108	103	.....	.....	211
Kissaïakh	.....	.....	.....	.....	.....	.....	96	85	.....	.....	181
Anoogamok	.....	.....	.....	.....	.....	.....	109	105	.....	.....	214
Total	1	.....	51	39	1,105	994	915	911	174	150	4,340

CHAPTER V.

THE INNUIT RACE.

THE KUSKOKVIM DIVISION.

The life and soul of this district is gathered entirely from the great river of this name, which is the only considerable rival of the Yukon in all Alaska.

A glance at the map will show to the observer or searcher after information a very remarkable broad opening, through which the strong current and turbid waters of the river is discharged into the Bering Sea. The tides in the estuary run here with a rise and fall and velocity truly surprising, reaching at Agaligamute the enormous vertical rise and fall of 50 feet. This extraordinary change in tide level is carried up into the mouth of the river, even to the point where the traders' schooners discharge at Shineyagamute, and it does not lose its influence until we reach the point of Mumtrekhlagamute. The whole physical aspect of the country here, under the influence of changing tide level and the sea direct, is strikingly desolate and forlorn.

The settlements which we shall enumerate in this reach along the tributary swamps of this river, as it were, are located on little patches or narrow dikes at the rim of high tide along the banks of the river proper; from here across to the hills in the rear and eastward extends a great swale and expanse of watered moor from 40 to 60 miles in width; at high tide it is apparently largely under water, and when the tide runs out great flats of mud and ooze are bare. A rank and luxuriant growth of coarse water grass, reeds, with little clumps at the tide rim of bush willows, birch, and poplar principally are found. These native villages range in close continuity, each occupying all the dry land in its neighborhood, it being a difficult matter to find a square rod of ground outside of their sites on which to pitch the traveler's tent—it is mud, mud, a whitish clay, through which at low tide it is almost impossible to pass from your bidarka up to the villages. Indeed, if you are unfortunate enough to reach a settlement coming down the river or going up, as the tide is out, you have literally to fold your arms and sit in your cramped boat until the roaring flood carries you to your appointed destination.

The width of this tide reach of the Kuskokvim is so great that the opposite shore, to the westward, as we go down to the sea, can never be seen from these villages, for it is very low over there, even more wet and swampy than here, and in consequence thereof these fish-eating people have repaired to the eastern side as a home.

There is another feature in this country which, though insignificant on paper, is, to the traveler, the most terrible and poignant infliction that he can be called upon to bear in a new land; we refer to the everlasting, blood-thirsty clouds of mosquitoes, accompanied by a vindictive ally in the shape of a small, but numerous and biting black fly, under the stress of whose persecution the strongest man with the firmest will must feel either depressed or succumb to low fever. They open their carnival of human tormentation from the first growing of spring vegetation in May, until it is withered by frosts in September. Breeding here as they do in these vast extents of slough and swamp, they are able to rally

around, and to infest the wake and progress of the explorer beyond all adequate description—language is simply unable to portray the misery and annoyance accompanying their presence. It will naturally be asked how and what do the natives do about this? We make reply that they too are annoyed and suffer, but it should be borne in mind that their bodies are anointed with rancid oil, and certain ammoniacal vapors peculiar to their garments if left hanging about them, of which even the mosquitoes, blood-thirsty and cruel as they are, are hardly equal to meet the repellant power. When they travel here they are however, glad enough to seize upon any piece of mosquito-net, no matter how small, but they usually have to wrap cloths or skins about their heads, and wear mittens, in midsummer. The traveler who exposes his bare eyes or face here loses his natural appearance; his eyelids swell up and close, and his face is one mass of lumps and fiery pimples. Why, they even torture the Indian dogs to death, especially if one of these animals loses an inconsiderable portion, by mange or otherwise, of its thick hairy covering. They drive bear and deer into the water; they are the scourge of Alaska.

The current of the Kuskokvim flows rapidly, and at its source is reported clear. Here, 800 or 900 miles from its mouth, report comes to us, of good authority, stating that twenty days' journey beyond, and up to its source, is over a very broad and very sluggish stream, indicating that the course of the Kuskokvim, as now laid upon the map by most geographers, is not commensurate with its true length. The peculiar whitish, turbid tone given to the stream below is primarily due to the discharge of a tributary which heads in the Nushegak Divide, and is still further aggravated by the clay banks at tide level. The run of salmon up this stream is very grand and great, and is long sustained, the season opening in June and not closing until the end of August.

The density of the population, as so remarkably portrayed in our list of the settlements on the mouth and immediate country adjoining, is such that in their active and energetic fishing for their own consumption they seem to absorb the greater part of this salmon run; at least the natives up on the source of the river complain very often of the scarcity of salmon. Not only the people of the Kuskokvim proper fish here, but even those of the lower delta of the great Yukon. Two thousand of them come over here to fish, making a sum total of six or seven thousand fish-eaters, consuming and wasting a quantity of salmon that should feed at least six or eight times their number were the fish canned or salted, instead of being used in their wasteful processes.

We pass now to an enumeration in sequence of the Kuskokvim villages on both banks in their order as we ascend the river from Good News Bay, pausing first to notice one little settlement, just below this bay, of Tzahavagamute, of 48 people. The Kuskokvim villages, in their order now as we ascend to Kolmakovsky, are as follows. We must remark, however, that at a majority of settlements a strong objection was made to a separate enumeration of sexes, and being alone among a savage people who do not even know the meaning of the word "authority" or "government," the writer was obliged to yield to their unfortunate whim, and be satisfied with totals alone.

Population of Kuskokvim Division.

Settlements.	Kuskokvim Innuits.	Ingalik tribes.	White.	Total.
Tzahavagamute	48	.....	.....	48
Mumtrahamute	162	.....	.....	162
Kl-changamute	18	.....	.....	18
Takiketagamute	21	.....	.....	21
Aguliagamute	120	.....	.....	120
Quinehahamute	83	.....	.....	83
Shineyagamute	40	.....	.....	40
Kuskokvagamute	24	.....	.....	24
Iliutagamute	40	.....	.....	40
Chimiagamute	71	.....	.....	71
Apokagamute	94	.....	.....	94
Kik-khwigagamute	9	.....	.....	9
Shovenagamute	58	.....	.....	58
Kakhuiyagamute	8	.....	.....	8
Akooligamute	162	.....	.....	162
Naghaikhlawigamute	193	.....	.....	193
Taghiaratzoriamute	52	.....	.....	52
Lomawigamute	81	.....	.....	81
Napahayagamute	98	.....	.....	98
Napaskiagamute	196	.....	.....	196
Mumtrekhlagamute village	41	.....	.....	41
Mumtrekhlagamute station	29	.....	.....	29
Kooigamute	215	.....	.....	215
Kulj-khlugamute	75	.....	.....	75
Kik-khtagamute	232	.....	.....	232
Paimute	30	.....	.....	30
Akkiagamute	175	.....	.....	175
Tuluksak	150	.....	.....	150
Kwigalogamute	314	.....	.....	314
A single house	10	.....	.....	10
Tookhlagamute	92	.....	.....	92
A single house	10	.....	.....	10
Oogowigamute	206	.....	.....	206
Kaltkhagamute	106	.....	.....	106
Okhogamute	127	.....	.....	127
Toolooka-anahamute	59	.....	.....	59
Kokhlokhtokhpagamute	51	.....	.....	51
Kolmakovsky Redoute	5	2	2	9
Roaming Koltchanes	.....	35	.....	35
Napaimute	.....	60	.....	60
Village at headwaters	.....	50	.....	50
	3, 505	147	2	3, 654

There are very few Christians among them, not more than 300 all told.

Commercially, they are poor enough to the traders' mind, having but little stores of seal oil (*P. barbata*), the animals being captured by them on the tide banks, principally in the mouth of the river. The seals also being great fishermen, find the Kuskokvim quite as attractive to them as it is to their human enemies. They have of land furs only a few mink skins. They exchange their oil for ground-squirrel parkas with their neighbors in the hills on the upper river. The use of this oil by these people in their every-day life makes them so shiny and so offensively redolent that their places of abode smell abominably rank and acrid.

In these villages above enumerated every one will be found to possess the "kashima," which is their general rendezvous for work and for amusement.

The only berries that nature affords them here in this country is the fruit of the *Rubus chaemavorus*, which they gather throughout the swamps and swales in great profusion, and which they saturate with their rancid oil before they are consumed.

In the winter season, when frost has locked up the miry swale and swamp everywhere about them, and snow lies deep and in vast drifts,

they take their dogs, and, if the weather will permit, spend most of their time in hunting the moose, which comes down to them from the mountains, or in visiting from village to village.

Before we ascend the river in continued enumeration, we desire to present a count and specification of the people who live on the western banks and extend clear around and up the coast upon the mouth of the Yukon River. The people living here do not differ materially from those we have just located, and they are living essentially in the same manner. They are also poor, having only mink skins and some seal oil for the traders.

The list of villages given below with specification of inhabitants is the result of an extended land journey made by Mr. E. W. Nelson, observer United States Signal Service, stationed by the government at Fort Saint Michael. We have entire confidence in his work from our knowledge of the gentleman's character and attainments.

Population of Yukon Delta and coast extending to right bank of Lower Kuskokvim.

	Innuits.		Innuits.
Pikmiktalik	10	Kaliookhlogamute	30
Pastoliakh	80	Kashigalagamute	10
Kigikhtawik	20	Nulakhtolagamute	25
Kotlik	8	Agiukchugamute	35
Fetkina Barrabara	30	Chichinagamute	6
Village, name unknown	6	Chalitmute	60
Ingechuk	8	Anogogmute	75
Kashutuk	18	Kongiganagamute	175
Chefokhlagamute, three villages	15	Koolwagawigamute	10
Chefokhlagamute	5	Kinagamute	60
Chefokhlagamute	6	Village, name unknown	15
Igiagagamute	10	Kwigathlogamute	30
Askinak	175	Nunochogmute	40
Kashunok	125	Nauwogalokhlagamute	100
Kaialigamute	100	Villages on Big Lake	166
Ookagamute	25	Yukon Delta, between Pastolik and Cape Romantzov	300
Oonakagomute	20	Small places in interior	200
Tanunak	8		
Total			2,006

Returning to the Kuskokvim, we again ascend from where we temporarily paused in this description, from the Yukon portage on up the river to Kolmakov Rédoute, a point celebrated as the focal center of trade in the district, and, as we have before said, established by the Russians in 1839.

The people above on the river bring down at regular periods many choice peltries, such as the skins of marten, fox, beaver, land-otter, wolf, black bear, moose, reindeer, lynx, &c., though they do not live in fixed abodes right about the post. The country is quite different here in its physical aspect from that which we have noted below; the river flows between high banks over a gravelly bed. The mesa-capped terraces rising from its bed run back some distance to high mountains and sharp peaks, with occasionally a spur, which is cut through directly by the stream.

A great abundance of spruce and other circumpolar timber is found here in size and quality quite large, and much superior to that found on the Yukon. Grass meadows and mossy tundras roll in between the patches of forest.

Reports from mining prospectors indicate that these hills and mountains show more promising signs of precious minerals, including cinnabar, than elsewhere in the Territory.

The situation of this post marks the limit of inland migration enjoyed by the Innuit race. Beyond it the tribes of the great interior have full sway. It is also removed from the disagreeable influence of Bering Sea, having more clear, settled weather here than down there. The prevalence of rain, and furious, protracted gales of wind accompanying it, so disagreeably emphasized on the Lower Kuskokvim, and, indeed, all the coast of Bering Sea, is such as to sorely try the Christian spirit of the best man who may ever make the journey there.

CHAPTER VI.

THE INNUIT RACE.

THE YUKON SUBDIVISION.

The people of the United States will not be quick to take the idea that the volume of water in an Alaskan river is greater than that discharged by their own mighty Mississippi, but it is entirely within the bounds of honest statement to say that the Yukon River, the vast deltoid mouth of which opens into Norton Sound of Bering Sea, discharges every hour of recorded time as much if not one-third more water than the "Father of Waters" as it flows to the Gulf of Mexico. There is room for some very interesting measurements to be made in this connection, and we hope that it will soon be done. We do know the number of cubic feet of water which the Mississippi rolls by New Orleans every day, but we do not possess authority concerning the volumes of the flood discharged by the Yukon. Entering the mouth, or rather any one of the many mouths of this large river, we are impressed first, by the exceeding shallowness of the sea 100 miles out from it, varying in depth from 2 to 3 fathoms; and, second, by the mournful, desolate appearance of the country itself, which is scarcely above the level of the tide, and which is covered with a monotonous cloak of scrubby willows and rank grasses. The banks, wherever they are lifted above the reddish current, are continually caving down, undermined, and washed away by the flood. So sudden and precipitate are these land slides at times that the traders and natives have barely escaped with their lives. For 100 miles up through an intricate labyrinth of tides, blind and misleading channels, sloughs, and swamps, we pass through the same dreary, desolated region until the higher ground is first reached at Kusilvak, and the bluffs at Andreievsky and at Chatinak give evidence of the fact that all the land in Alaska is not about to be under water. It is watered here, there, and everywhere; it impresses you with the idea of a vast inland sea, which impression holds good even as far up the river as 700 or 800 miles, where there are many points, even away as far in the interior as that, where this river spans a breadth of 20 miles from shore to shore. As we go, carefully noting the people and country, to its source, we are not surprised, when we view the character of the country through which it rolls, at the vast quantity of water in its channel. It would seem as though the land itself on either hand within our borders of Alaska, and drained by it, was a sponge into which all rain and moisture from the heavens and melting snow never found its release by evaporation, conserved to drain by myriads and myriads of rivulets into the great watery highway of the Yukon. We noticed a striking

evidence of the peculiar non-conductive properties of the tundra mosses, or swale, last summer in passing through many of the thousand and one lakes and lakelets peculiar to that region, where the ice had bound up the moss and overhanging water growth at the edges of the lakes. In the breaking up and thawing out of summer, that ice on which the moss extended failed to meet, and the renewed growth of this season of vegetation reaching out in turn from this icy border, will again prevent thawing, and so on until shallow pools and flats are changed into fixed masses of ice hidden from view.

The borders of the bed of this river alternate from side to side with flats here, and low hills there, the river shifting from one to the other. The hills above the mission are all timbered, as well as the rolling uplands, while the flats are covered with rank grasses and willow thickets. This river is bound by ice in October, and it is not released until the sun of June exerts its power. A very remarkable occurrence in connection with this annual event took place last summer by which a famine ensued, at the mouth of the Yukon, and the people thereof were obliged to repair to neighboring settlements far to the northward or Kuskokvim for food. The ice came down the Yukon in such masses and such profusion that it grounded in the deltoid mouth in the month of July, so as to form a barrier against the running of the salmon.

The Innuits on this river have no permanent places of residence above Anvik, though they frequently come across from Saint Michaels by the Unalakleet portage, over to the river, on various errands. They do not like to go above Anvik, or to roam over the portage even, unless they are accompanied by traders.

The central point and chief mart of the Yukon district, the base of traders' supplies is on Saint Michael's Island, lying close to the mainland, and forming a part of the southern shore of Norton Sound. Here s the old Rédoute Saint Michael, named after the Russian admiral and governor of the Territory, Tebenkov, established in 1835. This location is a forced one, because no sea-going vessels can enter the mouth of the Yukon; indeed, did they attempt such a thing they would be hard aground in this soft silt or mud, a hundred miles out at sea in a direct line from the point of their destination, far out of sight of land. It is necessary, therefore, to reach the Yukon either in small, light-draught vessels by way of Saint Michael's and its mouth, or else by the portage of 75 or 80 miles over from Oonalakleet to Kaltag, and many other overland portages in the same general direction. The land travel is winter travel, and not made as a rule in the summer, and *vice versa* in regard to the water way. The two trading establishments at Saint Michael and an adjoining Innuit village contain 5 white men and 1 woman, and nearly one hundred natives.

The people of the Lower Yukon, like their neighbors of the Kuskokvim, look to the fish therein for their primary food supply. The excellence of the Yukon salmon, its great size, quality, and exquisite flavor combined, is a by-word and a truism among all the fish-eaters of Alaska; not alone the red-flesh salmon in this river, but several species of the white fish of the salmoid group also, equally large and savory. The run, however, of the salmoidæ in this river is very much shorter of duration than that of the Kuskokvim, and the other principal salmon rivers in the Territory—so much so that in spite of the superior quality of the fish those who are interested in drying, canning, and salting salmon for our trade are afraid to locate on its banks.

The people have, perhaps, on the Lower Yukon the greatest abundance and variety of wild geese and ducks known to any people, savage or

civilized, in our world. Their flesh and eggs go a great way to make their existence more cheerful in our eye.

A number of hair seals (*P. barbata* and *vitulina*) ascend far up 300 or 400 miles; while the white whale bares his milky back as he snorts and rolls in the turbid channels of the delta.

There is a chapel at Saint Michael's, but the headquarters of the Greek Catholic Church, which has the only established mission in this country, is at Ikogmute, on the Yukon River, just opposite that point where the Kuskokvim portage comes over. Here is a church and several church buildings under control of an ordained priest, whose influence over these people is very small. On paper he lays clear claim to the host of 3,000 parishioners, but we were unable to read his title clear, even approximately, at any settlement. The worthy soul abounds in faith, however, and he, in addition to his first-cited claim, also reports that he holds 600 more "nearly persuaded," as if it were a mere question of time to gather them in finally.

The Innuit villages with their population in order as we find them, from the mouth of the Yukon up to Anvik, are as follows;

Population of Yukon or Kvikhpak Innuits from Uphoon Mouth to Anwik.

Settlement,	Innuits.	Creoles.	Whites.	Total.
Komarov Odinotchka	12	1	.....	13
Alexeiev Odinotchka	15	1	.....	16
Eliseiev's Barabara	20	.....	.....	20
Chatinakh	40	.....	.....	40
Andreievsky Rédoute	12	2	1	15
Stari-kwikhpak village	90	.....	.....	90
Razboinikskaia village	151	.....	.....	151
Ooglovia village	102	.....	.....	102
Ingahamé	63	.....	.....	63
Single house	10	.....	.....	10
Staraia Selenie	55	.....	.....	55
Ikogmute	143	5	.....	148
John's Station	35	1	1	37
Ruibnaia	40	.....	.....	40
Pogoreshapka	121	.....	.....	121
Single house	9	.....	.....	9
Paimute	89	.....	.....	89
Askhomute	30	.....	.....	30
Ignokhatskamute	175	.....	.....	175
Makeymute	121	.....	.....	121
Total	1,333	10	2	1,345

Saint Michael's may be called the dividing point between the Innuits of Norton Island, Bering Straits and the Arctic, and those to the southward of them clear to the Bristol Bay. Here we are struck by a saucier race of men who bear the unmistakable impress of the vicious and degrading influences of contact with whalers and rum. These people have for a great many years, especially in the straits and Kotzebue Sound, been thoroughly familiarized with all the tricks and petty treachery of white men. They show it in a very marked degree to-day. They have a few peculiarities also which individualize them from the lower Innuits, in the method of shaving the crown of their heads, many of the males leaving only a frontage of the hair around just above the ears and over the forehead.

They are seamen in the full sense of the word—hardy, reckless navigators; successful, also, making the journey to and fro in the waters between Siberia, Saint Lawrence Island, and our coast contiguous by boldly launching themselves, depending solely upon the frail support and float-

ing of their walrus-skin baidars stretched over wooden frames, securely bound with sinew and whalebone. They hoist a square-sail and run before the wind in heavy gales, or they employ oars and urge their course along with paddles when wind and tide are against them. They are, as a people, very poor, having nothing to tempt the cupidity of traders themselves, unless it may be the small stores of walrus oil and ivory which they may possess, with a few red and white foxes, perhaps; but in Kotzebue Sound the natives there get in exchange for what they receive from the traders from the inland tribes some of the choicest furs known to the Alaska mainland; whisky, of course, is the chief and demoralizing base of every bargain; so that these people of Kotzebue Sound and Cape Prince of Wales have in turn been plundered by whalers, and then plundered the whalers themselves; so that their reputation is most unenviable.

The natives of Saint Lawrence Island, who were visited in 1874 by Elliott and Maynard, and reported by them to be singularly fine specimens of their race, perished almost to a man during the winter of 1878–'79; at least as near as we can get at the true facts. The details, to a great measure, will be found in the report of Captain Hooper, U. S. M. R., who visited that locality during the past summer, to the Secretary of the Treasury.

These northern Innuits are not known anywhere to have a village located far back from the sea, save with two exceptions, where settlements are said to be located some 50 or 60 miles inland. These villages are the Selawik, on the river of the same name, emptying into Selawik Lake, and the Noahtagamutes, together with the Killaimutes, to the southward of and up the river. By reference to the map, however, it will be seen that these are only exceptions to the rule, as they are the only instances out of 35 settlements, which are located away from the tide level. These people in the straits, at Cape Prince of Wales and Port Clarence, are fishers and reindeer hunters. Those living on King's Island are seal and walrus hunters, having great trade in their home-manufactured water-proof seal throat and skin boots, which have so good a reputation among the whalers, who prefer them to rubber, being much lighter and far more enduring and equally water-tight, that a ready market for these wares is afforded by them to the natives of this island. On Cape Prince of Wales and the Diomedes the natives are hunters and whale hunters; they are also middlemen, as it were, between the Chuktches of Asia and the Innuits of Kotzebue Sound, largely engaged in illicit traffic. Those Innuits living between Cape Prince of Wales and inland rivers around, and compassing the shoals of Kotzebue Sound, are seal hunters and fishermen, varied with a little reindeer hunting.

From there to Point Hope the Innuits catch hair-seal and successfully hunt reindeer. They have a market for shirts and coats of the skins, which they sell to the whalers, and chiefly to the Innuits below. The inhabitants of Point Hope are peculiarly distinguished by their skill as whale-hunters and their energy in securing this quarry. They killed and captured last season five sperm whales. They also hunt walrus.

Along that dreary, low, ice-bound strip of coast, between Point Hope and Point Barrow, the scattered Innuit settlements subsist upon reindeer, seal, and walrus; and from Point Barrow, where they are also successful whalemen, and where they secure large numbers of reindeer, making its skins into clothing for sale to natives further south, they reach along in trade with their own people clear over to the McKenzie

mouth. In Kotzbue Sound there is said to be an active and successful hunting of "beluga." The streams or small rivers which empty into Kotzebue Sound mark the extreme northern limit of the run of salmon in America.

The population of the coast of Norton Sound from Saint Michael upward, and as far as Aziak or Sledge Island, was furnished by Mr. W. E. Nelson, Signal Service observer, from careful estimate made during a sledge journey last winter. His figures are as follows:

Oonalakleet	100
Igawik	6
Tup-hamikwa	10
Shaktolik	60
Oonakhtolik	15
Head of Norton Bay (scattered)	20
Ogowinanagak	20
Kwikh	30
Nubviakhchugaluk	30
At-nuk	20
Ignituk	100
Chiookuk	15
Tup-ka-ak	15
Okpiktolik	12
Imokhtegokhshuk	30
Chitnashuak	20
Ayacheruk	60
Oo-innakhtagowik	10
Small village opposite Sledge Island	10
Aziak (Sledge Island)	50
Total	633

The number of Eskimos from King's Island eastward to Point Barrow on the Arctic coast has been procured from careful count and estimates of Capt. E. E. Smith, who served as ice-pilot on the United States steamer Thomas Corwin, during her Arctic cruise last summer. He reports 32 settlements, as follows:

Okuvagamute (King's Island)	100
Nook (Cape Douglas)	36
Kaviazagamute (Lake Imorook)	200
Siniogamute (Port Clarence)	36
Cape York	24
Kingigamute (Cape Prince of Wales)	400
Inalit (East Diomede Island)	40
Village opposite; name unknown	18
Ta-apkuk (Cape Espenburg)	42
Kugalukmute	12
Kongigamute (Buckland River)	90
Selawigamute (Selawik Lake)	100
Kikiktagamute (Kotzebue Sound)	200
Sheshalegamute (Kotzebue Sound)	100
Tikizat	75
An-iyakh	25
Cape Sepping	50
Ip-Not	40
Tikirak	276
Cape Dyer	15
Cape Lisburne	13
Point Lay	30
Otok-kok (Icy Cape)	50
Kolumatourok	45
Noona-agamute	74
Ootkaiowik	55
Pinoshuragin	29
Ootiwakh	225

Refuge Inlet	40
Kokmullit (Point Barrow)	200
Colville River	50
In the Interior:	
Koo-agamutes	250
Noatagamutes	400
Killaïmutes	150
Total	2 990

CHAPTER VII.

THE INGALIKS, OR THE PEOPLE OF THE GREAT INTERIOR.

With this division we complete the circuit of enumeration and specification of the coast people of Alaska who live north of Mount Saint Elias and Prince William's Sound. The immense area of country which we have bounded, as the Great Interior, at the outset of our remarks, would naturally suggest itself as the home of an immense savage population, where aboriginal men might be living undisturbed by the avarice and cupidity of our race; but we have to record, as far as is known, the existence of a very limited number of people in this extended area. They are all Indians, and as Indians we find them everywhere that the traders meet them. It will seem perhaps an underestimate when we state the figures of this inhabitation at 2,000 souls as the maximum, based upon the very best authority which we can command. Of course, to take a census of these people, who do not live in fixed villages, but rove from place to place, from valley to hillside, and from river to lake, with the exception of those immediately on the Yukon and Tannanah, is an idle and an unprofitable task. But the Indians themselves during the last year, at the principal points where they gather to meet the traders, were patiently labored with in order to ascertain from them an approximate idea of their numbers, and the method employed of first getting the savage to make a line indicating each house in his village, and then again asking him to make as many marks as there might be men, women, and children in that house, so that, by laboriously prodding him through the whole settlement with which he was familiar, a comparatively faithful abstract of the people of his village would be presented—certainly much more reliable than the self-constituted count of any white man could be, for the simple reason that it is next to impossible to find the members of any family or families together in a village at any one time. The same method was employed among the Innuits, where the writer came in personal contact with them.

It is not necessary to enter into an analysis of the appearance and disposition of these people here, inasmuch as in stature and physiognomy, character, &c., they resemble the Indians described in the interior of British Columbia and Oregon; the same little peculiarities are noticed in the methods of their living, their houses, &c., with only this difference, that they are dog-drivers. They rely upon the rivers largely for food, using the birch bark canoes only, but they have an abundant supply of flesh and fowl in the mainland; and when they suffer, as all Indians do suffer in this country, it is due alone to their own improvidence in not catching supplies during the season of plenty. The ethnologist, who may find in the course of this great river the finest field, perhaps, for study and observation, will notice that the Indian features on the Lower Yukon are not, as he

first meets them, as pronounced types of the true face as he expected; but as he passes up the river step by step he will notice the evolution, from village to village, until he arrives at the Tannanah, of the pure North American aboriginal countenance. This suffusion, as it were, of Innuit blood on the Lower Yukon, doubtless arose during the progress of their wars in olden times when raids were made by the Ingaliks upon the Innuits, and their women carried off and up the river—very much indeed as the Romans treated the Sabines.

The Russians say that the Ingaliks have always complained of a scarcity of females, and it may be an interesting point to ascertain whether it is not due to certain practices prevalent among them.

Another noted instance of the peculiar indisposition of the native mind to profit by bitter experience in some regards, is the occurrence every year here, from the mouth of the river up, of the spring famine during the months of April and May, and until the salmon run. One would think that the bitter pangs of hunger which the native endured a few weeks before the arrival of abundant food would stimulate him to such exertion at least as might insure him and his family against its recurrence next spring; not so, however. The fish come; the famished natives gorge themselves, and thus engorged, loaf and idle the time away that should be better employed, and even before the supply of the fresh fish is exhausted by its cessation of running in the river they actually turn to newly "cached" supplies and eat of them. Such improvidence and reckless disregard of the morrow is hard for us to comprehend. It does not seem to lift their minds to the level of the brutes; the white traders among them, however, are swift to seize upon this peculiarity and its prevalence. They buy up largely of their hard-dried fish during the season of plenty, and sell them back to the starving native in the time of want, at exorbitant advances. It should be said, however, to the credit perhaps of these traders, that the exigencies of fierce rivalries and competition among them for the Indian trade impel them to this species of Shylockism.

In glancing at the map the eye will note a large superficial area on which no habitation is recorded in this district of the interior north of the Yukon River. Were there any considerable habitation therein it is certain that those Indians who live upon the Yukon, and the traders, would be apprised of the fact; while again to the southward, and shut out from the North Pacific by the lofty range at the head of Cook's Inlet and Copper River, is another lonely and uninhabited waste, where, save on the reputed course of the Tannanah, no rumor even on the Yukon exists of any native settlements within its limits.

This great area, wherein we find such scant or utter absence of population, is, on the south of the Yukon, heavily timbered—with spruce on the mountains; with poplar, birch, willow, &c., along the courses of the streams and rivers. Its recesses are doubtless penetrated by roving parties of hunters now and then who leave the great river and the Tannanah for that purpose, but it is literally as well as figuratively a howling wilderness. To the northward of the Yukon, timber extends down towards the Arctic as far as the northern slopes of the low and rolling mountains, which rise in irregular ridges northeast and southwest, trending from 100 to 150 miles north of the Yukon. With their elevation the uniform covering of forestry, such as we have described to the southward, ceases, and only those ridges which are detached from these hills and extend themselves down to the shores of the icy sea possess any timber at all; of course it is stunted, scant, and irregular in its distribution thereon. But that great Arctic moor is a surface of swale

and swamp of mossy tundra and lakes and lakelets during the summer, over which countless, nay, myriads of water-fowl—geese, ducks, and their kind—breed and molt in perfect security and free from molestation. Reindeer in extensive herds troop thereon, while the moose is more confined in its range to the valley of the Yukon proper, and the country to the southward. The musk-ox is no longer found in Alaska.

In the winter the driving storms of snow-gales and the intense cold prevalent in these parts undoubtedly is the secret of its lifelessness, so to speak. Ranges of temperature as low, for weeks and months in consecutive season, as 50° and 60° below zero (Fahrenheit), a degree of cold, which, when accompanied by the least wind, is fatal to human life if exposed.

These Ingaliks of the Yukon and Tannanah, the people of this great interior, are living principally on the banks of these rivers, where they have their villages, consisting of rude log houses, and marked in difference from the Innuit village by the absence of the "kashima." They are located as indicated on the map, and in the following order, as we understand, from Anvik, with the numbers of most of them definitely ascertained.

Settlements.	Whites.	Indians.
Anvik	1	94
Single house	.....	20
Do.	.....	12
Do.	.....	15
Novaia	.....	52
Single house	.....	15
Tanakhotkhaik	.....	62
Single house	.....	20
Chageluk settlements	.....	150
Khatnotontye	.....	115
Kaiakak	.....	724
Kaltag	.....	45
Nulato	3	163
Koyukuk River	.....	150
Terentief's Barabara	.....	15
Big Mountain	.....	100
Single house	.....	10
Sakatalan	.....	25
Yukatat	.....	6
Melozikakat	.....	30
Mentokakat	.....	20
Soonkakat	.....	12
Medvednaia	.....	15
Nowikakat	1	106
Kozma's Barabara	.....	11
Nuklukayet	2	27
Village above ramparts	.....	110
Fort Yukon	2	107
Gens de Large	.....	120
Tennanah River	1	700
Koltehanes, roving between Yukon or Kuskokoim	.....	75
	10	2,226

On the Yukon River, above the fort of the same name, we know of the following people trading with Americans at Fort Reliance, who may be on British soil:

	Indians.
Charley's people	48
Fetoutlin or David's people	106
Fort Reliance (one white)	82
Total	236

The fact that traders during the last fifteen or twenty years—at least five or six or ten years before our possession of the country—have trav-

ersed the course of the Yukon, and that since our acquisition of the Territory both traders' and other steamers make the trip from the sea, accompanied, as they are, with a retinue of white men, has familiarized the Indians thereon with white men, and into the adoption of parts of their dress; but the people of the Tannanah as yet remain comparatively unknown and undisturbed by them, it being their fashion to come down the river to the junction of the Yukon to meet them; but last summer a trader's steamer pushed up this river with the intention of going some 200 miles; how far they did go we do not know at present.

Three separate counts, by as many different authorities, of the Tannanah people fix their maximum number at 650 or 700 souls. The relations on the Yukon River of chief and people are very loose. The principal authority, if any, exerted among them is in the hands of the shamans or sorcerers, most of whom are unmitigated scamps, and who live largely now by blackmailing the traders. In this connection we recall the murder of Lieutenant Barnard (of the English navy) in 1848 on this river, instigated and perpetrated by one of these rascals. This man, who was the prime factor, or rather the actual murderer of the lieutenant, died last summer. At the headwaters of the Yukon, however, as well as the Tannanah, the Indians living there recognize their chiefs.

The language of trade among the Yukon people is primarily the Russian tongue or a sad imitation of it. The traders in the Innuit districts of the Kuskokvim and Nushegak usually employ the native tongues, while over the Aleutian, Kodiak, and Kenai districts the language of trade is essentially Russian, spoken in many cases tolerably well.

CHAPTER VIII.

TRADE AND RESOURCES.

In properly estimating and recording the trade in Alaska we have to first form an opinion of its resources. These come under the following heads: first, the fur trade, which to-day is really the only live industry in the Territory of any importance; second, the fisheries; third, the timber, mines, and mining; and fourth, last, and least of all, agricultural capabilities.

That the fur trade should monopolize the attention at first of those who sought to establish themselves by any industry here is most natural. A wild country like this, with scarcely a sign of white habitation, and in proportion to its immense area a scant aboriginal population, would seem and is the appointed home of wild animals.

The fur trade of Alaska to-day is divided under two heads, the land furs and the pelagic peltries. The latter preponderate in value to such an extent that the former sink into insignificance by comparison.

The history of this business, which we shall embody by careful and finished translations and selections from the Russian records in our final report, is being to a great extent repeated by our traders to-day.

The fur-bearing interests of first importance in all Alaska, as far as the United States Government is concerned, are those aggregated upon the Pribylov Group, or Seal Islands, in Bering's Sea, a history of which and voluminous description has been written by Elliott, and his views and premonitions made upon the subject in 1872–'73, based upon stud-

ies of the seal life, have so far been verified by the actual procession of events since then. In other words, on the Seal Islands of Alaska the government possesses a stock-farm, from which it will derive, as it has derived, an annual revenue of $317,000, without injury to or diminution whatever of the seals on these grounds. When the Congress of the United States passed the law protecting and conserving these interests it acted wisely, for under other and perhaps more popular methods of management the seal life on the Pribylov Islands would virtually have ceased to exist to-day—the same fate overtaking it that has been visited upon those great rookeries in the South Pacific, where to-day less than a scant 5,000 or 10,000 seals are taken, when forty years ago millions were secured. To the Russians belongs the credit of having saved and preserved these interests until they fell into our hands, and we have been wise enough to carry them out with some slight modifications in business management better suited to our people and the business itself.

The Russians in their colonial possession under Baranov, made, first, the seal-skin the basis of all transactions with foreigners by buying up whole cargoes of goods and provisions brought into this country by English and American traders, and paying for the same in this way. In other words, the Seal Islands were the exchequer where the Russian authorities could with certainty turn and lay their hands upon the necessary currency. These American, English, and other foreign sea captains having disposed of their supplies at Sitka or Kodiak in this manner, took their fur-seal skins to China and disposed of them at a handsome advance for tea, rice, &c., in exchange. The profits made by these foreigners having reached the ears of the Russian home management of the fur company controlling Alaska, it was ordered then that payments in fur-seal skins for these foreign supplies should cease, and that the Russians themselves would ship their skins to China and enjoy the emolument thereof. The result of this action was that the Chinese market did not prove as valuable to them as it was to the foreigners; it became overstocked, and a general stagnation and depression of the seal business took place and continued until a change of base in this respect was again made, and the skins of the fur-seal were shipped, together with the beaver, in bulk to the great Chinese depot of Kiakhta, where the Russians exchanged these peltries for the desired supplies of tea; the trade thereof assuming such immense proportions that the record is made where in a single year the Russian Fur Company paid to their government the enormous duty upon importations of tea alone of 2,000,000 silver rubles, or $1,500,000. This was the period in the history of the Seal Islands when, for a second time, and within the writing of Veniaminov, the seal life thereon was well nigh exterminated. The first decimation of these interests took place in the last decade of the eighteenth century and shortly after the discovery of the islands, when, it is stated, 2,000,000 skins of these animals were rotting on the ground at one time. Rezanov applied the correction very promptly in the first instance of threatened extermination of these valuable interests, and when the second epoch of decimation occurred in 1834 to 1836, Baron Wrangell, admirably seconded by Father Veniaminov, checked its consumption. These are instances of care and far-sightedness which are refreshing to contemplate.

To day, the authority of the Secretary of the Treasury is absolute on these grounds, and the law which limits the annual killing to 100,000 young males is faithfully carried out, together with all the other minor stipulations of the contract made between him on the part of the gov-

ernment, and the Alaska Commercial Company as parties of the second part, who lease the islands.

Detailed description of the method and manner of conducting this business would be superfluous here, as it has been fully set forth through a series of reports made by the officers of the Treasury, and drawn out by the progress of repeated investigations made by Congress into the subject.

The natives living on these islands, and who are descendants of the first imported laborers, enjoy the privilege of being the sole participants in the reward which accrues from the labor of taking and skinning the fur-seals so long as they shall be equal to the prompt and efficient discharge of that duty. Business foresight and sagacity have endowed these people with comfortable frame-houses in which to live, and their villages on each island are laid out in regular streets, kept neat and tidy.

The value of this industry is of course, so far as the traders are concerned, enhanced or diminished at the caprice of fashion, though the fur-seal skin in itself is an article of intrinsic value, as much so as any other article of luxury, such as tea, spices, &c. It furnishes a grade and quality of fur, the adaptation of which for cloaking, sacques, &c., is not equaled or excelled by any other national product. There have been periods in the history of the sales when these skins have been worth no more than $3 or $4; and there are instances where large cargoes have been disposed of at even smaller sums. To-day the value of the same has been suddenly and greatly enhanced by the activity of the French leaders of fashion who have put the price up to the high standard of $15 to $20 in the London market—a figure which the past history of the trade warrants us in saying cannot be long sustained.

These Alaskan Seal Islands are the only points within our boundary in the North Pacific and Bering Sea to which the fur-seal repairs, but the Russians enjoy control and possession of rookeries situated on Commander Islands, 700 hundred miles directly to the westward, where they are carrying out essentially the same course followed here.

As these seals pass up and down the coast as far as the Straits of Fuca and the mouth of the Columbia River, quite a number of them are secured by hunters who shoot or spear them as they find them asleep at sea—the principal catch of this character being taken between the southern point of Prince of Wales Island and Cape Flattery. Those skins taken by the natives at Prince of Wales Island, and contiguous territory, are sold at the Hudson Bay Factory, Fort Simpson, while the Indians of Vancouver's Island and Fuca Straits dispose of theirs at Victoria and points of Puget Sound. Also, small vessels are fitted out in San Francisco which regularly cruise in these waters for the purpose alone of shooting sleeping seal.

It is, of course, important to give an exact count of the number taken every year. It varies, however, according to the season, some years comparatively few being secured; and then again as many perhaps as 10,000 or 12,000 are taken. The young pups, of which the Aleutian islanders secure a few hundred, are not made the basis of any special trade, being killed mainly for their flesh as a food supply.

The next interest in order of its value and importance is the sea-otter trade. All the world's supply, as is the case in regard to fur-seal skins, comes from the North Pacific and Bering Sea; and when we come to record the sea-otter business with a view to its importance to the people themselves of Alaska, it is the first in order; for on its chase, and from

the proceeds of its capture, it maintains between 4,000 and 5,000 natives in comparative luxury, and enables them to live in a condition of simple civilization.

The sea-otter is a shy, wary animal, and it never congregates, so that where it is found to-day by the hunter it cannot with certainty be found to-morrow, involving by its habit the expenditure of great physical energy and hardihood to effect its capture. The skin itself of the sea-otter is the most valuable of all peltries, unless we cite the phenomenal appearance of a black fox-skin now and then. It was the cause and the alluring guide to the discovery and occupation of Alaska by the Russians, for after they had exhausted, comparatively speaking, the natural supply of the Kamtchatka and the Kurile Islands, they turned their greedy and determined hunt to the eastward and to America. It also drew the ardent Spaniard and the early English navigators, Portlock and Dickson, over the vast expanse of the great Pacific into the intricate and perilous navigation of the strange waters of Vancouver's Island and the great archipelago above it. An interesting point of comparison is instinctively made by us when we associate the fact that the Aleutians and Koloshians, on the Aleutian Islands and the northwest coast, respectively, when first discovered by these fur-hunters, were savages alike and equally prosperous. To-day, where the sea-otter and seal is found—thanks to the care and conservation of these interests by the Russians—the Aleuts are living as a better people than they were at first, while those natives far to the eastward, to whom we have referred, deprived of their natural source of wealth, are reduced to the lowest dregs of low Indian life—mere fish-eaters. Of course, there is considerable due to the fact that the mind and the disposition of the Aleut primarily was, and is, a better one than that of the Koloshian.

We have carefully noted in our citation of the settlements those points where the sea-otter was hunted, and it only remains for us to say here that the aggregate catch is to-day between 5,000 and 6,000 skins for the year, an astonishing advance over the figures handed down to us by the Russian chroniclers and those which were recorded in the early seasons of our occupation. Nine-tenths of this aggregate are taken in western Alaskan waters, for it is safe to say, from our knowledge of the subject, that the sea-otter is as rare in the Sitkan Archipelago and the coast as it is to-day off the shores of Oregon and British Columbia.

The value of these skins here among the traders reaches the high average of from $30 to $50, according to the quality of the skin, paid in cash or trade to the natives, and instances of unabated competition among the buyers have netted the hunter $80 for his skin. These skins are worth, according to the standard of the London market, from $80 to $100.

In order to show the simple increase of the number of sea-otter skins annually taken to-day over the figures of the past, it is only necessary to state that 2,000 sea-otters annually from all parts of the Territory was considered a good catch, while now between 5,000 and 6,000 are purchased every year by traders in Western Alaska, and thus far there is no perceptible diminution of the supply. For the past season the catch has been as follows:

In Kadiak district, reaching eastward to Mount Saint Elias	900
In Oonalashka district, from the Shumagin Islands to Attoo	4,850
Total	5,750

We now turn to the contemplation of the land fur-bearing animals, pausing to mention briefly that the hair seals of Alaska are comparatively insignificant in number and commercial importance, not note-

worthy in any respect; while the sea-lions are valuable only to the people of these regions, and are not even sufficient themselves in number to supply the demands of the native boat-builders, &c. The walrus herds, however, principally found in the great shoals of Bristol Bay, along the peninsula of the northern shore, trending also up along the coast as far as Cape Newenham and the mouth of the Kuskokvim Bay, furnish the means of the rendition of a little oil and considerable ivory, of which we are unable to give figures.

The whalers, when idle above Bering Straits and that vicinity, unable to sight their legitimate quarry, spend considerable time in the capture of the walrus there, and trade also with the natives of that region for its oil and ivory.

The land fur-trade of Alaska is not in its aggregate at all equal to either one of the two great industries we have cited, namely, the fur-seal and the sea-otter business. It employs, however, quite a number of our people as traders, either living permanently at the scattered posts, or else frequently visiting Alaska. It gives the natives a few luxuries, but in no case whatever does it furnish their sole means of support. The most valuable district, where the land furs are the finest, is that comprised in the Yukon district, where the marten and the beaver, the bear and the wolf, and the reindeer are the best, although the Kenai foxes and marten are equally good.

The great commoner among the fur-bearing animals of Alaska is the red and cross fox, the skin of which is of inconsiderable value. With the exception of that animal, most of the districts contain some one or more animals peculiar to themselves, and enhanced in value therefor. For instance, the blue fox is found only on the Pribylov Islands, Attoo and Atkha, while the finest white foxes are characteristic of Norton Sound and the Arctic. The black fox, the rarest and the most precious of all known furs, is not found in any one locality, but is an accidental occurrence, and its value is fanciful and extravagant. The silver fox, of which perhaps a few hundred are annually taken in all Alaska, is a very valuable peltry, as high as $40 or $50 being paid to the natives for them.

Following the sea-otter, we notice as next in importance the marten, which attains its greatest excellence in the mountainous districts of the interior, the headwaters of the Tannanah and the Yukon, and other mountainous rivers; the natives being paid by the traders, according to the quality of the skins, $1.50 up to $4.

The next skin in value is that of the land-otter, which enjoys an extended range, and nearly everywhere on the mainland south of the immediate influence of the Arctic. This skin is now largely used by the fur-dealers, who pluck it and dress it as they do the fur-seal, and when thus treated and dyed resembles that production, only thicker and heavier. These skins are worth—the best of them—from $2 to $3 among the natives, and bring in the market $3 or $4.

In sequence, we notice the black bear now, the value of which has enhanced lately. They are not very plenty, however, the common bear being the brown, with patched and harsh fur.

The beaver, which used to be the great staple fur of the interior, especially in those regions drained by the Nushegak, Kuskokvim, and Yukon Rivers, have latterly so diminished in number as to form a minor feature in the trade.

The first year that the writer passed at the head of Cook's Inlet (the winter of 1865–'66), the Indians of that locality reported a catch of over 11,000 beavers. To-day they consider themselves fortunate if they can

secure 200 or 300 skins of the same animal. The reason for this extraordinary diminution is ascribed to the occurrence of two bitterly cold winters in succession, whereby the beavers were frozen to death in their houses; or rather their places of egress and ingress were stopped by ice until they fasted and starved.

A considerable trade is done in reindeer skins, large herds of these animals ranging all over the tundra and the mountains of the coast and the interior, but this trade is confined to the country, manufactured and consumed therein, a very few being shipped out of it.

The trade in smaller peltries, scattered here and there in the several localities, as indicated in our description of the settlements and their position, is incidental to and of minor importance, the whole aggregate of which is of small proportion. The trade itself in Alaska is of course directed and stimulated by the mind, energy, and competition of our own people, the agents and representatives of three large trading companies, together with a smaller, but still an active exertion, made by individual traders. The Russians and creoles, who at the time of the transfer of the Territory were able to sustain any commercial enterprise on the score of their own individual activity and merit, have either drifted back to Russia or have entered into partnership with or the employ of the existing organizations to which we have referred.

The fur trade of this country, with the exception of that confined to the Seal Islands, and set apart by law, is free to any and all legitimate enterprise, but it is an industry the successful prosecution of which requires a considerable capital and much more brains, tact, energy, and persistence. An ordinary man cannot sustain himself among Indians. He who manages them must embody many attributes which are the exception rather than the rule in our people; indeed, a man who hopes to have any influence over the savage race must have, without doubt, more regard and more self-respect for his conduct and method of life than he would be constrained to employ were he to direct bodies of laboring men in our own country. The Indian is an exceedingly shrewd and close observer of the white man—nothing escapes him—and the trader who has no self-respect will never have that of the natives. The white man who, by stooping to the level of the Indians, hopes to ingratiate himself in their good favor makes a fatal error.

Trade as it is conducted in Alaska is principally over the counters of the traders' stores throughout the Christian settlements which we have specified in the Aleutian and Kadiak districts. These store-dealers to a great extent characterize the trade of Cook's Inlet, Kadiak, Kuskokvim, and Nushegak districts. There is, however, much individual trading done on the decks of the little vessels which are fitted up either at San Francisco or the Sandwich Islands for the purpose of hovering about where the sea-otter hunters and others in the Territory are known to live, and are supposed to have peltries. Those traders who are settled in the villages with their stores filled with goods, and other articles of savage barter, are, in self-defense as it were, rendered useful auxiliaries and promoters of the government purpose to prevent the introduction of spirits to the debauchery of the people, though it is very evident that whenever these traders enter into spirited and determined competition the party which furnishes the natives with the greatest amount of material for the manufacture of "kvass" is sure to get most of the trade. There is no legal punishment for this, and hence they cannot destroy one another by laying information before the government.

These Christian natives keep store accounts, and have pass-books in which they are regularly debited and credited by the trader. The In-

dians, of course, and Eskimos also, are usually settled with on the spot. The love of shopping, so pleasantly manifested among our ladies here at home, is equally a prominent characteristic of the Aleutian women, and some of the men, who delight in thronging the trader's store for hours and hours and days at a time, feasting their eyes upon the pinchbeck jewelry, causing the fatigued but patient clerk to spread the goods, handkerchiefs, &c. The Indians themselves in trading also exhibit the same love of prolonging the agony, so to speak, being themselves addicted to haggling and protracting bargains beyond all adequate description. A party of savages with their skins would pry about a trader's store or tent, and in disposing of their scanty stock will go in one by one at a time, look over and handle, if they can, the entire stock, lay down one skin and take its equivalent, then go out with the rest of their skins, repeating this operation until they dispose of their individual fur supplies. The time occupied in purchasing the furs offered by these Indians is protracted for days, frequently to weeks; or the Indian lays down all his skins at once, the aggregate value of which is thoroughly understood between him and the trader. Then the delay comes in for settlement by the difficulty with which the Indian satisfies his mind as to the quantity and quality of the articles to which he is entitled, protracting the consummation of his bargain into weeks.

A refreshing contrast, however, of this method of procrastination is exhibited by the sea-otter hunters. The writer recalls an incident happening under his observation in Oonalashka, where a party of 22 sea-otter hunters returned from Sannakh Island, where they had been hunting sea-otters during the preceding five months. The agent of one of the companies received them and went with them to his warehouse, where in one hour and a half he had appraised their skins, settling the different values upon them, according to their grade and quality, informing each hunter what he was to have and how much he still owed him; the whole purchase and settlement covering a sum of $5,200. In this short span of time each native was aware exactly of what was due him, and went away entirely satisfied. This is a business transaction as brisk and emphatic as can well be imagined.

The principal depots of the fur trade we have indicated on the map, and it will be observed that most of the stations indicating the paying sources of revenue from this industry are located near the sea-otter hunting grounds, while the great expanse and area of Alaska to the northward contains but a small aggregate, save on the immediate course of the Yukon, where there are fifteen or twenty posts.

The volume and value of the sea-otter trade we know definitely. That which belongs to the Yukon, Kuskokvim, and Nushegak districts we are also well informed of, but of that which extends from Norton Bay around to Point Barrow, derived from the Arctic Eskimos, we have no reliable data, though judging from the quantity of whisky that is shipped into those regions there must be some considerable industry. We append figures which will express themselves on this point:

Shipment of land furs from Alaska for the season 1879–'80.

	Marten.	Fox.	Bear.	Beaver.	Mink.
Kadiak region	2,900	1,800	220	1,500	1,200
Yukon region	4,000	5,000	450	2,100	16,000
Oonalashka region and Bristol Bay	2,400	1,200	120	200	1,400
Total	9,300	8,000	790	3,800	18,600

The furs obtained by whalers are not included in the above. The total value of those recorded is between $75,000 and $100,000.

It will be observed from the exhibit made by these figures that the land fur trade of Alaska is really insignificant in pecuniary value to that of the marine fur-bearing fauna. What this trade is capable of in the way of development on the main land is entirely a matter between the traders and the natives. The natural want or desire of the Indian from the stores of the trader at first is very little, consisting principally of ammunition and strips of cotton goods, but the shrewdness and address of the trader in stimulating the appetite of the Indian for tea, sugar, flour, tobacco, &c., causes the savage to eat up, as it were, more rapidly his skins, and makes him more active and energetic in the prosecution of the chase, which he will only do just as his physical appetites prompt him.

Broadly stated, and entirely within the lines of truth, it may be said that there is no danger of the extinction of the fur-bearing animals of Alaska as the trade is conducted to-day, and so long as it shall be principally in the hands of the natives. The country itself on the mainland protects the animals, while the good sense and superior intelligence of the sea-otter hunters will protect their interests as long as they themselves have its direction and control. We have alluded in this connection, while treating of the people of Ounga, to the peculiar processes by which white men are bringing themselves within the category of natives, who are alone by direction of the Secretary of the Treasury and by law permitted to hunt the sea-otter and other fur-bearing animals.

It must be a source of much satisfaction to the Government of the United States to know that in the acquisition of this extended land and these islands the native population, Indians and Christians, is not at all likely in the future, as it has not been in the past, to appeal for food and raiment at the cost of the public Treasury; that it is not at all necessary to send a retinue of Indian agents, with their costly supplies and dubious machinery, into this country; that the protection of the traders and the conservation of law and order in that region will not require the presence of an extravagant civilized government, nor the movement and disposition of soldiery and sloops of war. The simple needs of the people there to-day are embraced substantially in the establishment of courts of justice and record, with their inexpensive accessories.

The next interest of importance in order are those covered by the consideration of the fishing grounds. With reference to this topic we broach a very fruitful theme of speculation and prediction for the waters of Alaska. There is undoubtedly found at certain seasons of the year an enormous supply of salmon, and on the extensive shoals of Bering Sea and the North Pacific Ocean an indefinite and extensive distribution of cod. The fishermen themselves, after the fashion of their craft, have their own theories and methods, in a great many instances so widely divergent that it is difficult to reconcile them a correct mean. There is no argument, we believe, in regard to the extraordinary abundance and the superfine quality of the salmon indigenous to Alaskan rivers and streams. All authorities unite on this point, and agree in stating that the value of the natural resources of Alaska in this respect are simply regulated by the demand; that the supply is practically inexhaustible in abundance.

With regard to the codfish the opinions of authorities differ in many respects; we will not attempt to settle them. In the first place, a preponderance of testimony goes to show that the Alaskan codfish is ex-

actly the same species as is that found on the great banks of Newfoundland and the shores of Cape Cod. It also agrees with that in all essential points, as to size and weight, the cod of course being small, as is the eastern, while those fish caught out at sea on the banks in 40 to 60 fathoms are large, weighing from 20 to 30 pounds, the great object of controversy in regard to the Pacific as compared with the Atlantic cod embraced in the discussion arising over the relative quality of the fish taken from the two great oceans. The market of San Francisco exhibits both for sale—the Pacific and the Atlantic cod—cured of course either as boneless or soft fish. Here we find the Pacific cod quoted lower in the market than the Atlantic, differing as much as 1½ to 3 cents per pound, the eastern cod standing invariably at the highest quotations. This shows beyond all controversy that there must either be some difference in the quality of the fish itself, or else some radical defect in its curing on the Pacific. This the fishermen alone can settle; they do not agree at all as to the insinuation that they are not just as capable of curing codfish in Alaska as they are at Gloucester, Mass.; at least old Cape Cod fishermen are to-day engaged in this business of catching and curing Pacific cod, who say so.

The fact itself, however, that the cod-banks of Alaska, in their length, breadth, and superficial area, are the most extensive known to the fishermen of the world cannot be gainsaid, though it is probably true that the fishermen who repair to these shores or the most favored sections of that district do not find the cod bunched as it is on the more restricted fishing-grounds of the North Atlantic. Hence, in Alaska to-day they pay more attention to the shore or coast cod where the fish are, as we have stated, much smaller than they are at the deep-sea banks. It is a difficult thing for a judge, having eaten fresh cod in Massachusetts, to repair to Alaska and correctly estimate the quality of the fish which he will find there, for the simple reason that any man after making a long sea voyage from San Francisco up to the fishing-grounds will feel when he gets into port and tastes the fresh fish there that he never before ate anything so nice in that line. Certain it is, however, that the fresh cod of Alaska seemed to the traveler just as palatable, as firm and sweet, as they did to his palate in the East.

Another important point in connection with the prosecution of these fisheries may turn upon the quality of the salt which they employ up here. We leave that, however, for future investigation and discussion in connection with this subject.

Much stress is laid upon the fact of the non-development of the fishing interests of Alaska by the reiteration of the statement that the market is confined to the small local demand of California and the Pacific coast, where the population is a little over a million and a half. There is, however, a very large and important traffic with the South American states and provinces, and the reason why Alaskan fish does not reach these marts is not entirely clear to us; though we do know why there is a diminution of the demand for Alaskan salmon in Australia—because the exceeding benevolence and philanthropy of our government fish commissioners has stocked the waters of that southern island-continent with the California salmon.

In addition to the trade of San Francisco, some of the Alaskan fish, or a good deal of it, is diverted to the Sandwich Islands, but the fact remains, as exhibited by the trade statistics of San Francisco during the last six or seven years, that the volume of the codfish industry has steadily remained at an annual mean average of half a million fish. A little more activity and consequent increase in the capture will per

haps result from the fact that in addition to the regularly established fishing posts up there a number of small schooners have entered the list. It may result, as it has resulted heretofore, in over-stocking the market again and prostrating the lesser companies and individuals.

The cod-fishing fleet of Alaska to-day consists of a dozen or fifteen fishing-schooners, some of which are also engaged in the salmon business.

Before passing from the subject we may incidentally allude to the fact that much of the Pacific cod, or nearly half of it, brought into San Francisco comes from the Okhotsk Sea, captured, cured, and brought thence by our own people.

Latterly another fish has aroused the interest and cupidity of the Alaskan fishermen; we refer to the so-called mackerel (*Labrax monoprygis*), which has been offered in the San Francisco market, and finds an eager and ready sale. It has only been presented there during the last two years, and up to date the fishermen have not fully satisfied themselves as to its range and distribution with reference to the best grounds for capture. So far as known, it has only been found about the Aleutian and Shumagin Islands, and is only captured in bays and straits. It is a trifle larger than our veritable mackerel of the eastern coast, and it is said to be of a similar fine flavor and excellence. Possibly a thriving trade will yet be driven in preparing kits of this fish for exportation, full barrels of it having commanded the unwonted price of $24 each in San Francisco.

The salmon trade, to which we first made reference, has, for reasons which do not seem entirely satisfactory to us, been quiescent or stagnant, confined to the salting and exportation of a few thousand barrels annually, principally for the Sandwich Island trade. Why canneries should not be established and maintained at many of the favored rivers, especially in Western and Northern Alaska, is not clearly explained. Here salmon could be secured to any size and number at a cost not exceeding half a cent, or a mill, apiece, while on the Columbia River for the same fish they pay as high as 75 cents each. The fishermen say that they dread the experiment of establishing a cannery in these isolated regions, which they can operate only during the short, comparatively speaking, season of the salmon run. Surely they might put up their works in these places, repair thither at the right season of the year with their workmen, pound their fish, and can them to any amount, and come down on the same vessel that they went up in, leaving the rude sheds and boilers in the care of a watchman or two.

The halibut of Alaska is also very wide in its range, and is, as in the case of the cod, closely related to and essentially the same as that of the North Atlantic, equaling its eastern congener in size and quality. Instances are on record, and we ourselves caught with our own hands one of these fish that weighed 312 pounds, rendering it the largest food fish known to Alaskan waters; while the silver salmon of the Yukon is next in order, with a weight of from 75 to 90 or 100 pounds; probably examples are frequently caught which will tip the scales much beyond these figures. As yet the halibut has not been utilized in the direction of trade, except a small beginning made at Sitka; but the fish itself is there in Alaskan waters, to all respects and purposes, points of quality and abundance, equal to its kind known elsewhere.

Large schools of herring frequent during certain seasons of the year the waters of the Aleutian Islands, being especially abundant at Oonalashka, and more so at Sitka, much fatter and finer, perhaps, at Oonalashka than any portion of the Territory, but in greater numbers at Sitka.

The natives make no special use of them beyond their immediate consumption as they capture them, not drying or preserving them at all, save the spawn; but they do press the oil from them.

There are, of course, many other varieties of fish in these waters of Alaska, which are, however, of minor importance to the foregoing list, and of only small local value, so far as is known. The natives themselves in their rude methods of preservation are exceedingly wasteful and extravagant. For instance, a 50-pound salmon, after it has passed through aboriginal curing, will present to the observer's eye a shriveled object, scarce distinguishable in shape and outline, which will not weigh more than 5 to 10 pounds; 5 pounds is a very high average for the best samples of such preservation.

The annual shipments of perhaps 2,500 barrels of salted salmon and 500,000 codfish to the San Francisco market, make but an insignificant showing of the development of Alaskan fisheries.

We now turn to the consideration of what we shall find embraced in the timber and mines of Alaska.

With reference to the timber, first, the analysis and fair presentation of the claims of Alaska to the possession of vast tracts of valuable timber are now in order. At the outset of this report we sketched the distribution of forests throughout the whole country, or, in other words, we gave a free-hand drawing of its limits. In descending now to details we find that the timber of Alaska consists of evergreen trees, principally, the spruce family preponderating to an overwhelming extent. These trees grow, as might naturally be inferred, to their greatest size in the Sitka or Alexander Archipelago. An interregnum occurs from Cross Sound until we pass over the fair-weather ground at the foot of Mount Saint Elias, upon the region of Prince Williams Sound and Cook's Inlet. Here this timber again springs up with a new lease of life, as it were, and attains very respectable proportions in many sections of this district, notably at Wood Island and portions of Afognak, and at the head of the Kenai Peninsula and the two gulfs that environ it. The abundance of this timber and the extensive area clothed by it is readily appreciated by looking at the map, and rendered still more impressive when we call attention to the fact that the timber extends as far north, in good size, as the Yukon Valley. It clothes all the hills within that extensive region, and to the north of Cook's Inlet and Kenai Peninsula; so that the amount of timber found herein is, in the aggregate, certainly great. The size of this spruce timber at its base will be typified in trees on Prince of Wales Island 50 feet and over in height, with a diameter of at least 3 feet. They have not grown in proportion to their age as fast as they would have done were they growing in a more congenial latitude to the south, such as Puget Sound or Oregon; hence, when they are run through the saw-mill the frequent and close proximity of knots mar the quality and depress the sale of the lumber. Spruce boards also are ineligible for nice finishing work in building or cabinet ware, or, indeed, anything that requires a finish, and upon which paint and varnish may be permanently applied, for under the influence of slight degrees of heat it sweats, exuding minute globules of gum or rosin, which are sticky and difficult to remove.

As we have stated just above, the spruce constitutes a vast majority of the forest; the other timber trees in Southeastern Alaska, Kodiak, and Cook's Inlet may be called the exceptions to the rule. But one very valuable species of yellow cedar, , is found scattered here and there within the Alexander Archipelago, and on the 30-mile strip. Here this really valuable tree is found at wide intervals in small

clumps, principally along shoal-water courses and fiords. It attains in itself a much greater size than the spruce; frequently trees will be found 100 feet high, with a diameter of 5 and 6 feet. The lumber made from it is exceedingly valuable, of the very finest texture, odor, and endurance, highly prized by the cabinet-maker and the shipbuilder.

If these Alaskan spruce forests, to which we have just made reference, could only have been by some happy transposition of nature resolved into the cedar, and its place taken by the spruce, the value and importance of the Alexander Archipelago could hardly be overestimated. It would be the ship-yard and lumber depot of the whole Pacific. The scattered thickets of maples, poplars, birch, and willows have little or no economic value, and they are hardly worthy of the least consideration as such. There are to-day in this Territory three active saw-mills, one located at the northern extremity of Prince of Wales Island, one at Sitka, and one on Wood Island, off Kadiak. They are not sawing lumber for exportation; the first-named two mills are engaged, when they are running, in satisfying the demand for lumber coming from Fort Wrangell and a small local building in Sitka, while the one on Wood Island seems to be principally engaged in making sawdust with which to pack ice, which latter commodity is, by the way, never shipped out of the Territory, but regularly put up in obedience to the instructions of a certain contract, as to the conditions of which we have no definite knowledge. The lumber which the traders use in the Aleutian Islands, and which they employ in limited quantities of course to the northward, comes directly from San Francisco or Puget Sound. Ship-loads go up every year from Californian ports.

In regard to the use of this lumber from California, the Aleutian Islanders are employing it now, to the exclusion of their original resources in the shape of drift-wood and such, for the frames of their bidarkas. These in turn, strange to say, are lashed with bamboo cane or strips instead of the primitive whalebone and sinews. It is possible a mere matter of time ere they import canvas and India-rubber cloth with which to supplant their sea-lion skins.

While, therefore, we find a very large supply of timber in Alaska, such as we have described, yet it is instantly apparent that as long as the immense forests of Oregon, Washington Territory, and Southern British Columbia stand as they stand to-day, as long as this shall be so, the market for Alaskan lumber will be practically null and void.

From the consideration of the timber we pass to the reputed and well-known coal mines. Coal is found chiefly and wholly of a lignite composition at a great many points throughout the southern and western coast of Alaska and the islands thereof; and during the past season a vein was opened in the Arctic, above Cape Lisburn, by Captain Hooper, of the Revenue Marine, who says that he mined it easily, and used it with great satisfaction in making steam for his vessel. If this be true, and we have no reason to doubt it, then there is at least one good coal mine in Alaska. The oldest coal mine in the country is that so long and patiently labored with on Cook's Inlet, near its mouth, at a place still called on the map Coal Harbor. The Russians also took notice of coal on the Shumagin Islands, at Oonga, and several openings were made by them of veins here and there in the Alexander Archipelago. Following the Russians, our people discovered and attempted to work one or two in the Sitkan Archipelago and several to the westward. The quality of all this coal located and worked for a brief experimental period was of so poor a grade that in no case has it been pronounced fit for use on steam-going vessels. It is so highly charged with sulphur and other deleterious combinations that during combustion, which is

very rapid, it seems to eat out, as it were, the heart of the iron and ruin the boilers. The value, however, of Captain Hooper's vein in the Arctic to the opening enterprise of steam-whaling, and for the use of the Revenue Marine itself, must be of very striking moment. These examinations of and experiments with Alaskan coal have been exceedingly thorough and patiently wrought out at Oonga, where the most laudable, persistent, even desperate determination has been manifested by the owners of certain ledges thereon to develop their unprofitable holdings into mines of wealth. The steamers in the Territory to-day bring their own coal with them, or have it sent up by tender from British Columbia Sound or California. The traders at the different posts where timber is scarce, or entirely wanting, use it now as their principal fuel, and it is the sole fuel on the Seal Islands.

In regard to the reputed findings of large paying gold mines and other precious minerals, we can only say that as far as is known to-day there is nothing of the kind in Western Alaska; at least, there is nothing located and worked as such, though the prospecting or searching is as active as it has been since the transfer, and is likely to continue. The surface of the country in Southern Alaska being so mountainous and concealed by the timber cloak everywhere covering it, is, of course, a slow and exceedingly difficult undertaking to penetrate any distance back, up, and among the mountain valleys in search of mineral. The color of gold can be washed out of the sands of every little stream emptying into the ocean on the northwest coast, and in many places it can be found by searching in the surf-beaten beaches of the sea-coast itself. But the question immediately arises with the miner, "Will it pay?" and by that he means "Will it yield me $4 to $10 a day if I work it?" Less return for his labor does not satisfy him, nor will it bring others to the places.

The gold-bearing belt of the Rocky Mountain divide, so familiar to us as it crops out all through our States and Territories, and which we leave at Boise City, in Idaho, for instance, or Salmon Diggings above, reaches undoubtedly up and on, as rich at that point in the far north and trending to the Arctic Sea itself as it is where we now note it and work it with so much success. But it must be borne in mind that with every degree of northern latitude as we ascend we cut off working-days, as the icy grasp of frost checks the flow of water and shuts down the mills, so that when this gold-bearing belt crosses into our Alaskan boundary away back, and concealed from the sea by the towering summits of the Coast Range, we find it so far north as to be practically barred out from our miners unless they shall find the free gold and a rich quartz in unwonted abundance.

The Cassiar diggings, which have, during the last five or six years, given quite an impetus to Alaskan travel by Fort Wrangell and Sitka, are situated in the territory or dominion of British Columbia far up the Stakhine River, and away from our limits. They have been failing lately and the last season's work has been one of sore disappointment and discouragement to the few miners who still hold on.

In Norton Sound, within the deep land-locked shoals of Golovin Bay, there are reputed to be leads of silver ore and graphite. Cinnabar has also been discovered on the Kuskokvim; assays made of the ore in San Francisco indicate a very valuable discovery there. Other than these minute circumstances, we have no better evidence to offer at this writing of the mineral wealth of Alaska unless we refer to the old legend and partial corroboration of it in regard to the presence of an extensive deposit of copper *in situ* on the banks of the Atna or Copper River. There is also a mine opened, but just at present not being

worked, on Prince of Wales Island. This little mine, however, we might say is owned by British Columbians, who say that they are barred out from their legitimate home market on account of the Dominion tariff; hence they are idle.

We now pass to an interesting and fruitful bone of contention, that is the agricultural and pastoral resources of Alaska. So much has been said upon this topic, of frantic declamation on one hand, and indignant remonstrances on the other, that we shall be very cautious in our presentation of what we believe and know to be the fact.

In the first place, let us preface our remarks with this statement: That the cereal crops cannot be grown in Alaska. It has been settled by numberless patient and repeated tests in the most favored localities. Also, that the fruit trees, and the small fruits of our gardens here as we grow them and recognize them (unless it be the strawberry and the cranberry), cannot be cultivated successfully up there. But these people do have in Alaska quite an abundance of indigenous hardy shrub fruits, such as we have specified in our chapter upon the settlements. The statement made by certain high authority that wild apples are indigenous and perfect their fruit at Sitka, is a mere figure of speech; but the other half of the assertion that wild roses grow there is true; for that matter the wild rose blossoms with a rosy flush and the suggestion of perennial flowering up the Yukon, while the flowers, the violets, the gaily colored pea, and indeed the whole long list covering nearly 200 species of lovely blossoming annuals and perennials are found everywhere on the little prairie-like forest, on the bare hills of the Aleutian Islands sweeping on and over the great moor and tundra of Alaska.

But when we take up the subject of the vegetable garden, we find that there are localities in Alaska where for the last eighty years, or even more than that, up to the present date they have and they do plant and raise good potatoes, though we should say perhaps that this raising of these tubers is not a certain success year after year except at one or two points where it has been satisfactorily demonstrated within the Alexander Archipelago, namely at the mouth of the Stakhine River, at Fort Wrangell, and at Prince of Wales Island. The potato grounds of Alaska, however, can with care and due diligence and common-sense combined be made to furnish in the Alexander Archipelago, in Cook's Inlet, at Kadiak Island, and islets contiguous, and at Bristol Bay, a positive source of food supply to the inhabitants. It is not generally known that on Afognak Island, according to the best of our personal knowledge, there are nearly 100 acres of land dug up in patches here and there which are planted by the inhabitants, and from which they gather an annual harvest of potatoes and turnips. They have no fields spread out, squared up, and plowed anywhere in Alaska. The cultivation as it is conducted to-day, is directed in this manner: The little openings in the forest or the cleared sides of a gently sloping declivity in sheltered situations are taken up by the people who turn out with rude spades of their own manufacture, principally, for the purpose of subjugating and overturning the sod. Many of the gardens, noticeably those at the Kadiak village itself, are close by the settlement, while others are at some distance.

The potato crop at Kadiak this year was a total failure; it will happen so at intervals of from four to six years when it occurs in this way: The winter preceding the planting has been an unusually cold and protracted one, and the short season, at the best, of summer is cut off by unwonted early frosts during September and the latter part of August. The usual growing season, however, opens early in June—

from the 1st to the 10th; the potatoes are planted in May, coming up and growing freely until October, when they are harvested. This growth of potatoes, fairly established and well defined, presents the only firm and tangible evidence that we have of agricultural capacity within the limits of Alaska. The turnip grows and flourishes wherever the potato succeeds.

On Wood Island, during a number of years past, horses have been kept there to perform certain labor in connection with that mysterious Ice Company contract, and for the use of these horses a field of 12 acres of oats is regularly sown; they grow up, frequently head out, but never ripen. This, however, is a secondary object with the planters who cut the green crop for haying purposes.

We are called upon also to record briefly the repeated attempts made to raise stock cattle, sheep, and hogs in large herds within the borders of Alaska. The subject is one in which the Russians first naturally took a deep interest, for they were fond of good living, and were as desirous as any people could be to have the best of beef, or nice mutton, and the sweetest pork on their tables. They brought over hardy selections from the Siberian stock, placing the cattle at almost every point of importance for trial. The result after years of patient and persistent attention was that the herds on Kadiak Island throve the best and became of real service in assisting to maintain the settlement. Here there was, as there is, a very fine ranging ground for pasture; in the summer there is the greatest abundance of nutritious grasses, but when the storms of October freighted with snow, accompanied by cold and piercing gales arrive and hold their own until the following May and June the sleek fat herd of September becomes very much worn and emaciated in June. It has given its owner an undue amount of trouble to shelter and feed; hay, however, here suitable for cattle, or at least to keep cattle alive, can be cut in almost any quantities desired for that purpose, but the stress of weather alone even with abundance of this feed depresses as it were and enfeebles the vitality of the stock so that the herds on Kadiak Island have never increased to anything approximating a stock grower's drove as we understand it. They seem to rarely exceed 15 or 20 head at the most. Notable examples of small flocks of sheep which our people have brought up since the transfer and turned out at Oonalashka, Oonga, and elsewhere, have done well, but winter comes around again and the trouble begins. The mutton of the Alaskan sheep when it is rolling in its own fat, as it were, derived from the native pastures, is pronounced by epicures to be very fine. But the severe winters, not so cold but protracted, and the weather so violent that they have to huddle for weeks and weeks in some dark low shelter causes a sweating or heating of their wool which is detached and falls off, greatly enfeebling and emaciating the animal by spring. The practice of the traders now at some places is to bring beef cattle up in the spring from San Francisco, turn them out into the grazing grounds on the Aleutian Islands, Kadiak, and even to the north, where they speedily round out and flesh up into the very finest beeves by the middle or end of October, when they are slaughtered. Some ludicrous instances occur in this connection when Texas cattle are disembarked in these unwonted nooks where they charge from the gangway of the vessel up through the native settlements as though possessed of the evil spirit. They of course at once repair to the solitudes of the mountain recesses of the interior away from the settlements, where they remain undisturbed until they are hunted and shot by the traders. The natives of the settlements into which these strange horned bovines

charged dived into their barrabaras with remarkable celerity and activity, peeping from thence at intervals in fright, under anticipation of some fearful crisis.

The Russians familiarized some of these natives with horses as well as cattle; but a great sensation remained in store for these people after the transfer of the Territory, when mules were taken up there by the soldiers under the mistaken notion that they were going to be used in going about and over the country; these animals to the Indians were a source of profound astonishment, and the mules manifested towards them an exceedingly vindictive and aggressive disposition, always charging, ears laid back, and with threatened uprising of the heels, upon the luckless savage should he chance to cross their feeding-grounds, the Indians turning in swift, tumultuous flight from the advance of the unknown quadrupeds when they would have faced any number of bears without moving a muscle in their countenances.

Mules and horses, however, have no economic value here; there is no service for them on land. A little work is done with profit on the Seal Islands by mule teams, and these, perhaps, are the only draught animals or saddle animals that have any useful purpose to serve in the Territory to day, with the exception of those we have cited at Wood Island.

With regard to the raising of hogs, the propensity of these creatures to devour carrion on the sea-beach bars them of much interest, and they are not encouraged anywhere. The same difficulties, however, occur of feeding and caring for them during the winter, were they regarded as a valuable accession to the trader's store.

In the light of the above concise and explicit recital, we feel fully warranted in saying that the extended coast islands and mainland of Alaska would not support and will not invite any considerable or noteworthy number of our people as agriculturists, but it is also equally apparent that the existence of those who are living in the Territory and who will always live in the Territory can be softened in many of its asperities by better attention to the development of the resources which are latent in the soil at many favored localities, notably at Bristol Bay, Kadiak, Cook's Inlet, and the Sitkan Archipelago. What strikes us most to-day with regard to this topic in this relation is the singular indifference of and growing disinclination of the people themselves to labor in this direction. In the times of the old Russian rule there were regular orders and regular squads of soldiery assigned to this purpose every year, and the old retired and patient colonial citizens were obliged by the terms of their indenture with the company to devote themselves wholly to agriculture. Now, of course, they are free to choose between the profits of hunting and the smaller gains of farming, and they naturally drop the latter and rally to the former. It will thus be noticed that the subject of agricultural resources in Alaska has not been a new agitation, and the result of American thought and industry; and it will be found in the future, as it has been in the past and is to-day that those points located by the Russians eighty years ago as the best for their potatoes and other garden relishes, such as radishes and turnips, are the ones which we find so to-day.

CHAPTER IX.

EDUCATION IN ALASKA.

In the discussion of this subject, embodying as it does a vital interest to the people of Alaska, we are brought face to face with many natural and some artificial difficulties. In the first place, the limit to which a savage people will progress, forced by all the pressure of a higher civilization, has been repeatedly marked in the examples recorded of the educational disappointments and successes which have attended the efforts of our government and our clergy to elevate the minds and advance the comfortable living of our own immediate aborigines. We cannot overlook their plain teaching, and we shall not, but there are some points which strike us as we regard the field of Alaskan labor, which we deem right and expedient on the part of the government to undertake and carry out, for if the youth of Alaska are to be lifted above their existing low medium level, in our opinion the Government of the United States alone can do it; or at least it is the best able from its position of strict neutrality among religious creeds to promote the progress of simple elementary education among those people.

In the first place, it will naturally be asked why is it that where so many churches and chapels stand there should be any need of governmental care or attention to school-houses; what are the people there themselves doing? If they have interest enough to support, sustain, and conform to the Christian religion, how is it that they do not become impressed by the equally valuable suggestion of the necessity of teaching their children the rudimentary elements, at least to read and write? These are pertinent questions, and they are not easy to answer. They require the following presentation of a peculiar situation: The Russian Church, which is the dominant ecclesiastical power in Alaska, is of course poor, comparatively speaking, necessarily so, and the great majority of these chapels are in the hands of natives and creoles, who are not members of the clergy. A somnolent organization is their chief constitution. They drone through the exercises of the church as appointed, and preside at its calendar days of festivity, after which they retire seemingly exhausted and desirous of repose. If anything can be done to reach these men, to invigorate and stir them up, it must come from the individual supervision and orders of some active, zealous head of the church. The present bishop, Nestor, who has recently assumed the spiritual direction of affairs in his diocese of all Alaska, promises to be such a man; his predecessor certainly was not.

Among the 7,000 or 8,000 members of the Russian Church we have found less than 400 able to read and write in either the Russian, the Aleutian, or Kadiak Innuit vernacular, though in the villages where parish churches are located quite 30 per cent. of the people possess these rudiments of education. The average attendance at two schools, those of Oonalashka and Belkovsky, is ridiculously small—less than ten of both sexes. At the Pribylov Islands, where the special agents of the government watch over the schools, the attendance is 22, and the children are instructed in the English language.

Not one of the three missions of the Yukon, Nushegak, and Kenai, possesses a school, and in the village immediately surrounding the former (which now has a native missionary) the writer found but one man who could speak even the Russian language, outside of the attachés of the church. The bishop above referred to has planned the establishment of a training-school for native boys from all parts of the Territory at Oonalashka, but, of course, the English language will be ignored there.

We find, among the Innuits in especial, a quickness of apprehension and a lurking spirit of inquiry, which, to our mind, points them out as capable of being very much benefited by an intelligent system of educational labor, provided it can be established in their country. They are, if anything, brighter and more desirous of learning than the Aleutians themselves, who appear, as a people, to be degenerating, owing to the hybridization constantly going on in their country.

The natives themselves are quickened into the appreciation of the benefits of an education as they observe the advantages which those among their number have over the rest, being conversant in the method and manner of conducting trade, keeping accounts, and the advancement of these educated examples among them by the traders to positions of trust and confidence. This practical application reaches them fairly and fully, where the most eloquent and cogent advocate of the abstract advantages of education would fail to make the slightest impression or arouse a passing interest in their minds.

All those who read and write to-day, principally their own language, among the Aleutians as a class and the Kadiakers, have derived these elementary rudiments of instruction from the Greek Catholic Church. The father who can read and write, as a rule, teaches his son, while the exercises of the church keep the lesson somewhat fixed in the juvenile mind.

At the location of all parish churches it is supposed or expected that schools will be maintained by the church authorities, but they are, as already mentioned, very lax in this respect. The Presbyterian Board of Missions has established quite an extensive and successful school and house of refuge at Wrangel; at Sitka a school is supported by the joint co-operation of the people there and the naval authorities, but at least 20,000 natives are to-day entirely without the remotest influence of church or school—a fact our boards of foreign missions might take into consideration.

Under existing circumstances the general government could extend educational facilities only through the medium of the Indian Bureau, a branch of administration having as yet no foothold in Alaska. The extension of all the complicated and expensive machinery of the bureau would be unwise, indeed, among tribes now entirely self-supporting and occupying no lands attractive to white men; but as an entering wedge and earnest of future civilization, 15 or 20 youths might be chosen from various regions, instructed in some of the Indian schools (such as at Carlisle, Pa., for instance), and if found to be capable, trained as teachers in some normal school. Care should be taken in the selection of the boys, who should be pure natives and not the offspring of traders and native women, in order to insure the desired future benefit.

It will be said that the process of educating these young men in our own country will so unfit them for future residence in their own that as soon as they return they will hasten to get back. This insinuation is not borne out by the records made of quite a large number of Aleutian youth who have, since the transfer, been from one cause or another taken down to San Francisco and the States east of the Rocky Mountains where they were educated, and where, in all instances that we have knowledge, they have invariably returned, if alive, to the country of their birth. This is simply natural, and it needs no extended explanation.

Where there are white people in the Territory to the number of a few families and upwards, they themselves can solve the school question or not as they please, but with the natives we can readily understand the wide difference wherein they are helpless and the former self-reliant.

CHAPTER X.

POLITICAL STATUS.

Alaska is to-day, and has been for thirteen years, "a thing which it is not," a Territory in name only, without its organization. It is a customs district, for the collection of customs only, with a collector and three deputies separated by hundreds and even thousands of miles. It has no laws but a few Treasury regulations. It has no county or subdivisions, and, of course, no capital. The collector of customs and the only representative of police restrictions—a man-of-war—are located at Sitka, cut off from all communication with the bulk of the Territory except by way of San Francisco.

In the strip of country between Cape Fox and Mount Saint Elias, 300 miles long by from 30 to 60 miles wide, including islands, or about 18,000 square miles, there are about 500 whites and creoles, able to perform the functions of citizenship, and 5,000 wild Indians; about enough for a small county organization.

In all the western region, the special subject of this report, there are 139 white males and 5 females, including 3 boys and 1 female child, and leaving 136 white men and 4 women. Among the Creoles between 400 and 500 might be found sufficiently intelligent to understand what constitutional government means, though not speaking English, making an average of less than one possible citizen for every 1,000 square miles of superficial area, without regard to the fact that many of the men are foreigners.

The main difficulty of organizing or legislating for Alaska lies in the utter impossibility of reconciling the widely diverging interests and wants of two sections, entirely separate geographically and having no one feature alike, besides being ridiculously unequal in size. The sketch-map accompanying this report will illustrate this at a glance. The only practical and economical solution of the question would be to treat each section separately.

A reference to the map would also impress the observer with the vast distance in many cases from one settlement to its neighbor, rendering as a rule communication between the small villages and settlements of the Territory infrequent and rare, San Francisco being the central point of information received annually from the whole Territory; for instance, the people of Kadiak or Oonalashka hear from and learn of any one in Sitka by the "Golden Gate," and *vice versa*.

The only official knowledge which the government can have or will have of the condition of affairs in Alaska has been and will be derived from the cruising of the revenue marine steamers. The mail line established between Sitka, Wrangel, and Port Townsend, Puget Sound, is a branch of the postal service extended but to a faint degree over Alaska.

CHAPTER XI.

DISEASES.

The subject of the health of the natives is one that may be treated bodily; or, in other words, those diseases which are most fatal to life in one section of the country seem to be as applicable to all the others.

In the first place, the natives, as they grow up, are light-headed, have little or no parental supervision or care in regard to attention, clothing, &c., from a purely sanitary point of view; for the little fellows, male and female, for the first few years of their lives, are more often naked at all seasons of the year than they are clothed, though the little girls, as a rule, receive the earliest garments. Exposed as they are, in their manner of living, to draughts, to insufficient covering, and cold nooks for slumber, they naturally lay the foundation, at the outset of their rude lives, for pulmonic troubles in all their varied degrees. Consumption is, therefore, the simple and comprehensive title for that disease which alone destroys the greatest number throughout Alaska. The Aleut, the Indian, and the Eskimo suffer from it alike; and they all exhibit the same stolid indifference to its stealthy but fatal advancement—no extra care, no attempt to ward off, protect, or shelter, not even until the supreme moment of dissolution comes.

After consumption, perhaps the largest list of death causes will be laid at the door of scrofulous diseases, taking the form of malignant ulcers, which eat into the vitals and destroy them. It renders whole settlements sometimes lepers, in the eyes of the civilized visitor; and it is hard to find a settlement in the whole country where at least one or more of the families therein has not got the singularly prominent scars peculiar to the disease. Most of this scrofulous complaint being on the surface, as it were, of the patient's body, we naturally would look for some care and attention from the hands of the sufferer towards the alleviation of his own misery; while, with regard to consumption, that being more concealed and less disagreeable both to the native and his associates, it is not quite so natural for them to notice it in the way of a remedial appliance; but, so far as we know, the same apathy exists among the natives with regard to the treatment of scrofulous trouble. It is, of course, by their neglect and filthy habits, immensely aggravated and made more violent.

Following these two great sources of disease and death, we have to enumerate quite a list of other ills, such as paralysis, inflammation of the bowels, a few cases of fits, and a rather abrupt ending of advanced middle-aged life called "general debility"; or, in other words, these people, as a rule, live to no great age, as might be inferred from the method and exigencies of their life. When a man or woman rounds his or her fifty years, he or she is a rare example of the tribe; yet, if he or she is free from rheumatic troubles, or the death-grasp of disease, it is never without injured vision, for it is a noteworthy fact that eye diseases necessarily arise from the smoky interiors of their barrabaras (and the snow), and other places of residence principally so affect the eyes that the middle-aged are rarely without signs of decay, the various stages of granular ophthalmia being most marked.

The Eskimo people suffer from snow-blindness, and for its prevention use their peculiar goggles, but the greater evil of smoke poison to the ophthalmic nerve is not removed by any of them, or overcome; they seemingly live on, to live as wretched in the future as they have in the past. Of course all the traders have their medicine chests, or nearly all of them, and much relief and real kindness is extended by them to the suffering natives immedately about them wherever they are; but what they do, or can do, is, of course, a mere drop in the bucket. Hence it will be observed that the natives of Alaska are not a long-lived people as a rule, and when an old man or an old woman—very old—is found among them, she gives evidence of what must have been in her youth a magnificent constitution—iron-clad, in fact.

The Indian, Eskimo or Aleut, has not, however, an exalted idea of our pharmacy; in other words, they appreciate only forcible treatment; nothing else will satify them. As an example, of Epsom salts used by the traders who are obliged to give, if they give any at all, to a suffering native, the vilest dose must be administered, or there is no effect in the operation whatever. Natually the traders use only the very simplest remedial agent known to the apothecary.

The natives themselves have no medicine whatever, nor any knowledge, as far as we can find out—and this is a very singular fact—of any medicinal herb whatever; all their lesser and slighter indisposition, arising from any natural cause, they treat by the universal and everlasting sweat-bath. This is their panacea, and this is all, except when they call in the "shaman" to either worry the last hour of the unhappy patient even to death, or to prolong his wretched existence for a longer period by stimulating perhaps an undue nervous tension, which causes the usually languid and resigned sufferer to rally, as it were, before the flame flickers out.

These people are certainly fatalists. They are wonderful in their patience when suffering all the ills that flesh is heir to in their lonely, desolate homes.

We have to speak of the dreadful consequences, in addition to the troubles which the natives themselves are responsible for, arising from the introduction of small-pox through Russian intercourse, first in 1838 and 1839, which swept like wild-fire up from its initial point at the confines of the southern limits of the Alexander Archipelago over the whole length of the Aleutian Chain, Cook's Inlet, Bristol Bay, Kuskokvim, fading out within the north, until entirely checked by the Arctic cold. It actually carried in its grim grasp one-half of the whole population of Alaska to an abrupt and violent death. In certain places it swept out the entire population, being exceedingly virulent among the Kaloshians of the Alexander Archipelago. The physician who knows this, however, will readily understand how a people living as they lived and live to day, with their strange apathy and sanitary regulations, as we understand it, will fall down and be crushed before and under the march of this disease. It is said that when La Pérouse touched in this country, at Lituia Bay, he found natives then, in 1786, to his great astonishment, marked by small pox, which it seems the savages had contracted from a visit made to the coast by the Spaniards nine or ten years earlier; yet there is no definite knowledge that this epidemic in prehistoric times even approximated the extent and decimation of that which we have just cited. In 1843 and 1844 another outbreak of small-pox took place on the Aleutian Islands, but the people did not suffer as they had previously, great numbers of them having been vaccinated by the Russians in the mean time.

Upon this point, the only interest or attention which these people have already given to our medical practice is manifested; they do occasionally ask why the American Government does not send out its agents for the purpose of vaccinating their people, as the Russians did. This is a suggestion which, though late, may be timely.

Another imported plague among these people was, as is, due to the introduction of the measles, a simple trouble with us, but of fatal power among them, assuming, doubtless on account of the exigencies of the climate and methods of life, the black form. It first ravaged Kadiak Island and the mainland contiguous, on one or two occasions, and produced a panic also at Sitka. The climate of Alaska renders its treatment very difficult, and it is an exceedingly dangerous complaint

up there for those even who have the best of care and medical attention. The last extended occurrence of this took place during the winter of 1874–'75, principally confined to the Kadiak Island.

The question naturally arises now, are these people of Alaska increasing annually in the aggregate of their numbers; and, if so, to what proportion may we reasonably look for their maximum limit? To this we make answer that, in our opinion, the inhabitants of the Aleutian Archipelago, the Peninsula, and Cook's Inlet are to-day nearly as numerous as they have been at any time since the decimation in 1838 and 1839, caused by the small-pox plague of that season. All authorities agree in saying that these people had never regained their former strength in point of numbers.

With reference to those Innuits to the northward and the Indians of the great interior, we are strongly inclined to say that they certainly number to-day as great a population as in years gone by, and as many as the country will support, always bearing in mind their extraordinary wastefulness in seasons of plenty. Were they provident they might live by tens where a single one lives now. The same remarks are applicable to the Kaloshians of Sitka and that country.

They are indifferent when living, and they are as apathetic when they face death. Their methods of burial are defined quite sharply—the Aleutians burying their dead with all the Christian ceremonies, as also do the other semi civilized natives. The Indians place the forms of their departed in boxes upon rude scaffoldings above the reach of animals, or enveloped in skins merely; while the Innuits bury their dead wherever they live, without the pale of perpetual frost, in boxes or without, making a shallow excavation, into which they lay the body, usually crouched up, and supinely marking it with a simple stake, surmounted occasionally by rude images of fish, beaver, or something of the kind, suggested, perhaps, by some direct characteristic of the deceased in hunting these animals.

CONCLUSION.

As a summary of the statistics scattered through preceding chapters, we present the following brief tables, reserving for the final report all detailed comparisons and deductions:

1—POPULATION.

Divisions.	Whites.	Creoles.	Aleuts.	Innuits.							Indians.	Total.
				Kodiak.	Togiak.	Bristol Bay.	Kuskokvim.	Yukon.	Bering Sea.	Arctic.		
Yukon division	28	10	.....	.....	.....	.....	.....	3,339	633	2,990	.....	7,000
Interior division	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,226	2,226
Kuskokvim division	2	.....	.....	.....	.....	.....	3,505	.....	.....	.....	147	3,654
Bristol Bay division	1	90	324	.....	1,826	2,099	.....	.....	.....	.....	.....	4,340
Kadiak parish	23	770	.....	1,798	.....	.....	.....	.....	.....	.....	15	2,606
Kenai mission	9	64	.....	98	.....	.....	.....	.....	.....	.....	813	984
Belkovsky parish	36	223	410	.....	.....	.....	.....	.....	.....	.....	.....	669
Oonalashka parish	28	256	1,108	.....	.....	.....	.....	.....	.....	.....	.....	1,392
Pribylov Islands	18	.....	372	.....	.....	.....	.....	.....	.....	.....	.....	390
Saint Lawrence Island (estimated)	.....	.....	.....	.....	.....	.....	.....	.....	400	.....	.....	400
Nunivak Island (estimated)	.....	.....	.....	.....	.....	.....	.....	.....	500	.....	.....	500
Total west of Prince William Sound	145	1,413	2,214	1,896	1,826	2,099	3,505	3,339	1,533	2,990	3,201	24,161
Estimate of Prince William Sound	.....	.....	.....	300	.....	.....	.....	.....	.....	.....	200	500
Southeastern Alaska	247	270	.....	.....	.....	.....	.....	.....	.....	.....	5,000	5,517
Grand total	392	1,683	2,214	2,196	1,826	2,099	3,505	3,339	1,533	2,990	8,401	30,178

The Russian Church claims on its registers 10,950 members, distributed as follows:

Sitka parish	275
Oonalashka parish	1,364
Belkovsky parish	633
Kodiak parish	2,606
Pribylov parish	372
Nushegak mission	2,848
Yukon mission	2,252
Kenai mission	600

Of these numbers, at least half of those counted with the northern missions, or 2,500, may be safely stricken off as fictitious; 1,013, the creoles, are semi-civilized, a small percentage being able to read and write, while the remainder are savages to all intents and purposes.

2.—TRADE AND RESOURCES.

The business interests of Western Alaska may be divided into the fur trade and fisheries, the former being, of course, the most important. The skins of marine animals especially are exceedingly valuable. The 5,700 sea otters shipped during the past season represent a value of $600,000 in the London market, and the 100,000 fur seals considerably over $1,000,000. The principal land furs are annually secured in the following average quantities: Marten, 10,000; foxes, 8,000; bear, 1,000; beaver, 4,000; mink, 20,000; representing a value of $80,000.

The fisheries send to the San Francisco market 600,000 codfish from the Shumagin Islands, worth, perhaps, $70,000; and 2,000 barrels of salmon, worth from $12,000 to $15,000.

In the line of provisions, Western Alaska is a good customer for San Francisco, having received during the past season, through the established firms alone, 18,200 barrels of flour, 3,452 cases of hard bread, 753 chests of tea, and 2,948 half barrels of sugar. Of leaf tobacco, at least 50,000 pounds are consumed.

In conclusion, we must refer briefly to the manner in which the foregoing information, and much that is still reserved for future elaboration, was collected. An exploration of the country was made as follows: From San Francisco to Oonalashka by steamer; thence eastward to Belkovsky and the Shumagin Islands, and westward to Atkha, also by steamer; then northward to the Pribylov Islands and Saint Michael, Norton Sound, again by steamer; from the latter point the journey was made entirely in a "bidarka" or skin canoe, 18 feet long by 30 inches wide, up the Yukon River about 800 miles; back again to a portage connecting with the Kuskokvim River; up that stream to Kolmakov Redoute and down to the seaboard; thence coasting along to Bristol Bay, making a portage across Aliaska Peninsula to Katmai, and thence again across Shelikhov Straits to Kadiak Island, Saint Paul Harbor; from here by small schooner to the southern end of the island, and thence to San Francisco, making a round journey of 4,500 miles by steamer, 2,500 miles by canoe, 1,700 miles by sailing vessel; a total of 8,700 miles on sea and rivers.

Thanks are due to the Alaska Commercial Company and the Western Fur and Trading Company for free passage of the special agent to and from the Territory, and other courtesies extended, and also to Capt. C. L. Hooper, United States Revenue Marine, for assistance in fitting out for the overland journey.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 41.

CERTAIN TRIBUTARIES OF THE POTOMAC RIVER.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Report of surveys of certain tributaries of the Potomac River.

JANUARY 15, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 13, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, dated the 12th instant, and accompanying copies of reports from Mr. S. T. Abert, United States civil engineer, upon examinations and surveys, made in compliance with the provisions of the river and harbor act of June 14, 1880, of Neabsco Creek, a tributary of the Potomac; Potomac River at the mouth of Pohick Creek; mouth of Currioman Bay, Virginia; and of Nomini River, Virginia, from the ferry to head of tide-water.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 12, 1881.

SIR: In compliance with provisions of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Mr. S. T. Abert, United States civil engineer, of the results of examinations and surveys, made under his direction, at the following localities, with the view to their improvement, viz:

1. Neabsco Creek, Virgi nia, a tributary of the Potomac.
2. Potomac River at the mouth of Pohick Creek.
3. Mouth of Currioman Bay, Virginia.
4. Nomini River, Virginia, from the ferry to head of tide-water.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY OF NEABSCO CREEK, A TRIBUTARY OF THE POTOMAC.

UNITED STATES ENGINEER OFFICE,
Washington, D. C., January 7, 1881.

GENERAL: I have the honor to submit the following report of the survey of Neabsco Creek, made during the month of August, 1880, in accordance with a provision of the act of appropriation for rivers and harbors approved June 14, 1880, and assigned to me by your letter of June 17, 1880.

Neabsco Creek, or Neapseco, as it is spelt on the Coast Survey chart, is about 28 miles below Washington City, and is situated in Prince William County, Virginia, and in the collection district of Alexandria. It is a tributary of the Potomac River and enters it southwest of Occoquan Creek. It widens out at the mouth, extending over a flat 2,500 feet.

The shipments from the landings are now made in long-boats, drawing from 3 to 4 feet water, which take advantage of the tide to run over the flat at the mouth of the creek, and passing upward enter a narrow and tortuous channel, which extends through a marsh of rank vegetation for a distance of 6,470 feet to the head of navigation. The channel through the marsh averages about 40 feet wide at the surface, with a depth of 2.5 feet at the center. The vegetation on each side would greatly increase the cost of dredging a channel of a width greater than its present dimensions.

During the low tides which prevail with winds from the northwest, boats are delayed for several days. The improvement of the creek would benefit about 50 square miles of land.

Four-fifths of this section is well timbered. The yearly exports are 4,000 cords of wood, 10,000 cross-ties, 75,000 hoop-poles, and 2,000,000 feet of lumber from Willis's saw-mill, besides staves and smaller articles. The fisheries of Col. J. W. Fairfax at Freestone Point rent for $1,300 per annum. The fisheries of Mr. J. Neglee on the left bank near the mouth of the stream are of no value at the present time. The soil is well adapted to grazing, and to the growth of grain and fruits, and attention is being given to bringing the land under a better system of cultivation. A good quality of slate is found about 2 miles from the head of tide, but is not quarried owing to the cost of transporting it to market. Iron was at one time smelted in the vicinity.

This section of country was early settled.

Ships were formerly built on the banks of the Neabsco, which were engaged in foreign commerce, and shipment of wheat and other produce was made. Now the Alexandria and Fredericksburg Railroad crosses the stream near its mouth, and has a good station on its right bank. The draw of the railroad bridge is at an angle with the present channel, and when opened gives two clear passage-ways for vessels, one 21 feet wide, the other 18 feet.

CHARACTER OF THE PROPOSED IMPROVEMENT.

The residents who are interested in the proposed improvement desire a channel for light-draught steamers from the 7-foot curve, in the Potomac River, to a point as near as may be practicable to the crossing of the Telegraph and Colchester roads. But in order to reach the cross-roads, it would be necessary to make a solid cut through a marsh for a distance of 2,000 feet. I have therefore limited the length of the estimated channel, by stopping at Atkinson's upper landing, a distance of

14,770 feet from the 7-foot curve in the river. Atkinson's lower landing is 11,650 feet from the same point, and both these landings are upon the north side of the creek. Willis's Landing, where the proposed channel also touches, is upon the south side, and is 7,510 feet from the 7-foot curve in the river.

The following estimate gives the cost for dredging a channel 7 feet deep at low-water and 100 feet wide, 20 per cent. being added for the reflow of soft material from the sides of the cut:

I. Cost of a channel 7 feet by 100 feet from the 7-foot curve to Willis's Landing, distance 7,510 feet:	
106,800 cubic yards, at 20 cents per yard	$21,360
Add 10 per cent. for contingencies	2,136
Total	23,496
II. Cost of a channel of 7 feet by 100 feet from the 7-foot curve to Atkinson's lower landing, including the landing at Willis's Wharf, distance 11,650 feet:	
184,300 cubic yards, at 20 cents per yard	$36,860
Add 10 per cent. for contingencies	3,686
Total	40,546
III. Cost of a channel 7 feet by 100 feet from the 7-foot curve to Atkinson's upper landing, including a channel to Atkinson's lower landing and Willis's Wharf, distance 14,770 feet:	
254,200 cubic yards, at 20 cents per yard	$50,840
Add 10 per cent. for contingencies	5,084
Total	55,924

A channel of smaller dimensions than that given above would, if permanent, answer for the present and prospective need of trade, but as it would rapidly deteriorate, the channel above estimated would be more economical and satisfactory.

A cut of the same dimensions as that given above as far as Willis's Wharf, and continued to Atkinson's upper landing, with the dimensions reduced to 6 feet deep and 40 feet wide, would cost, including contingencies, $37,000.

A tide-gauge was nailed to the telegraph pole on the east side of the Alexandria and Fredericksburg Railroad bridge, the zero of which corresponds to the low-water observed during the survey.

The chart accompanying this report was reduced from the field chart in the office, constructed on a scale of $\frac{1}{3600}$.

I am indebted to Messrs. W. W. Anderson and W. P. Watson for the information contained in this report.

Very respectfully, your obedient servant,

S. T. ABERT,
United States Civil Engineer.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

SURVEY OF POTOMAC RIVER AT THE MOUTH OF POHICK CREEK.

UNITED STATES ENGINEER OFFICE,
Washington, D. C., January 7, 1881.

GENERAL: I have the honor to submit the following report upon a survey of the Potomac River near the mouth of Pohick Creek, Virginia, made during the month of August, 1880. This survey was provided for

in the act of appropriations for rivers and harbors approved June 14, 1880, and assigned to me by your letter of June 17, 1880.

Pohick Creek unites with Accotinck Creek in forming Gunstun's Cove, an estuary of the Potomac River, about 18 miles below Washington City. The residents desire an improvement of the channel from the Potomac River to Gunstun's Wharf, a distance of 3,400 feet.

The petitioners for this improvement are residents of a tract of country known as Mason's Neck, comprising about 14,000 acres of land, one-half of which is well timbered and possesses a productive soil. It is situated in Fairfax County, Virginia, and in the collection district of Alexandria. Gunstun Hall, the old seat of the Mason family, is in fair preservation, and is now used as a dwelling and post-office. The soil is well cultivated and the crops of cereals and fruit are abundant. Products are shipped and freights are received by the steamer W. W. Corcoran, which carries the daily mail, but owing to the low tides caused by the winds difficulty is experienced in reaching the landing at Gunstun's Wharf. The steamer approaches the landing over flats which have a uniform depth of 5½ feet at mean low-tide.

An improved channel of from 8 to 9 feet deep and 150 feet wide would meet the requirements of trade and satisfy the wishes of those interested. A channel of less dimensions would add to the facility of reaching the wharf, but would fill so soon after completion that economy would be best subserved by adopting the dimensions mentioned above.

An estimate of the cost of dredging such a channel is given below, and its position is indicated by dotted lines upon the accompanying map. The material to be excavated is soft mud.

Much of the wood and lumber of this section is shipped by means of long-boats which take advantage of the tide to go up Pohick Bay for a distance of about 2 miles.

No appropriation is asked for the improvement of the bay above Gunstun's Wharf, but the following information which may be useful at some future day is submitted:

Value of land near Pohick Bay varies from $5 to $10 per acre; upon Accotinck Creek the value of land varies from $10 to $50 per acre; 400,000 to 500,000 feet of lumber is rafted from Pohick to Troth's Mills, on the Accotinck, and is then sawed and shipped.

From 1,000 to 2,000 cords of wood are shipped from Pohick annually by means of long-boats, besides an unknown quantity of hoops and staves. Judge Edmond's fisheries upon the banks of Pohick formerly rented for $500 per annum, but now rent for $20; Otterbach's fisheries are not now rented or used.

ESTIMATE OF THE COST OF DREDGING A CHANNEL FROM THE POTOMAC RIVER TO GUNSTUN'S WHARF WITH A DEPTH OF 8 TO 9 FEET AND A WIDTH OF 150 FEET, AND INCLUDING 20 PER CENT. FOR THE REFLOW OF THE SOFT MATERIAL FROM THE SIDES OF THE CUT.

93,400 cubic yards, at 20 cents per yard	$18,680
Add 10 per cent. for contingencies	1,868
Total	20,548

TRADE, SHIPMENTS, AND RECEIPTS.

Number of passengers to and from Gunstun's Wharf for the year	2,000
Value of grain and fruit exports	$20,000
Fertilizers received	15,000

Tide-gauges were left at Gunstun's Wharf and at Brick-yard Wharf, the zero of which corresponds with mean low-water as determined by

the survey, which was probably too short a period for the proper determination of the mean low-water for the year. Maximum velocity of tide observed was 0.13 mile per hour.

I am greatly indebted to Mr. W. W. Anderson and Mr. W. P. Watson, assistant engineers, for the information contained in this report and for the field maps.

A reduced chart of Pohick Bay accompanies this report, based on a chart of $\frac{1}{3600}$ which is in this office. A letter of Mr. S. W. Smith, relating to the trade and productions of the land on Pohick Bay, is appended.

Very respectfully, your obedient servant,

S. T. ABERT,
United States Civil Engineer.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

COMMERCIAL STATISTICS.

GUNSTUN, *November* 2, 1880.

DEAR SIR: Your communication was received in due time, but I have been quite sick for two weeks, which accounts in part for my delay. In answering your questions I shall have to make rough estimates, as I have no means at hand to give accurate figures from.

The land tributary to Pohick Creek and Gunstun Wharf comprises about 7,000 acres; the grain, stock, fruit, garden-stuff, wood, and other things are probably worth $20,000. Manufactures consist in lumber and flour, which is done at Accotinck, the head of navigation. These mills have a large trade from Maryland, across the river, and they too are interested in the improvement of Pohick Creek.

The wood alone shipped on the creek must amount to at least $3,000 annually. Besides this there is a large fishing interest on the shore.

Potatoes and fruit are large items in this estimate; there are at least 15,000 fruit trees of different kinds. A business so large as the above of course must be met with a corresponding increasing trade in the way of supplies, and among them is a large item in the shape of commercial fertilizers, from 30 to 40 tons a year; then lumber, lime, &c., are large items as well. I think it safe to estimate what is brought to us at $15,000.

The owners and occupants of the 7,000 acres are all interested in the improvement of the creek and the entrance to Gunstun Wharf as well.

The mail for Gunstun post-office is delivered at the wharf. Many times in the course of the year the mail and passengers are sent in with the life-boat, the water being too low for the steamer to touch the wharf; and after being obliged many times to take passengers from the boat with a carriage, the people united in a petition to Congress for an appropriation to dredge a channel that would permit the steamer to reach the wharf at any stage of the water.

I am entirely sure that I express the wishes of the entire population who depend on water communication to ship the products of their industries and receive their supplies, that some adequate improvement be make at the wharf and in the creek.

Respectfully yours,

S. W. SMITH.

S. T. ABERT, Esq.

SURVEY OF MOUTH OF CURRIOMAN BAY, VIRGINIA.

UNITED STATES ENGINEER OFFICE,
Washington, D. C., January 7, 1881.

GENERAL: I have the honor to submit the following report of a survey of Currioman Bay, made during the month of September, 1880, in accordance with a provision in the act of appropriation for rivers and harbors, approved June 14, 1880, and assigned to me by your letter of June 17, 1880.

Currioman Bay is an estuary of the Potomac River, situated in Westmoreland County, Virginia, in the collection district of Tappahannock, and about 82 miles below the city of Washington. Its length from the head of the bay to the channel at its mouth is about 3 miles, and its average width is three-fourths of a mile.

Freight is shipped from a wharf $2\frac{1}{2}$ miles from the mouth. After passing the bar, in ascending the channel the basin deepens from 9 to 10 feet, and shoals again to 7 feet near the landing. The depth on the bar at mean low-water is 7.5 feet; which is reduced by northwest winds to 6.5 feet. Four steamers ply to the bay—3 from Washington and 1 from Baltimore. Sailing vessels drawing from 7 to 8 feet come to the same landing.

The farmers and shippers living in the vicinity of the landing, including those living on Nomini Creek, are now displaying much business activity. About 10,000 barrels of oysters, and large quantities of grain, and many cattle, 20,000 tons of ship-timber, and 80,000 feet of sawed lumber are shipped annually to northern ports. Other items will be found in the letter of Mr. R. B. Reed, appended to this report.

To meet the requirements of the growing trade it is proposed to dredge a channel through the bar above mentioned 2,050 feet long, 150 feet wide, and 11 feet deep at low-water. About half-way between the mouth and the wharf a bar makes out which the pilots desire to have buoyed, but the channel to the north of it appears to be sufficiently wide. No appropriation was made for an examination of the shoal water at the wharf.

ESTIMATE FOR A CHANNEL THROUGH THE BAR 2,050 FEET LONG, 150 FEET WIDE, AND 11 FEET DEEP.

30,100 cubic yards at 25 cents per yard	$7,525
Add 10 per cent. for contingencies	753
Total	8,278

The tide-gauge for reducing the soundings was established at Bushfield Wharf, in Nomini River, but the soundings were reduced $\frac{5}{10}$ below the zero of the gauge; the time occupied in making the survey being thought too short for the correct determination of the plane of mean low-water.

A chart reduced from a field map on a scale of $\frac{1}{3600}$ accompanies this report.

I am indebted to Mr. W. W. Anderson and to Mr. William P. Watson, assistant engineers, for the information contained in this report.

Very respectfully, your obedient servant,

S. T. ABERT,
United States Civil Engineer.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

COMMERCIAL STATISTICS.

CURRIOMAN WHARF, VA., *November* 20, 1880.

SIR: In reply to your request of the 12th October, I will say, as briefly as I can. My ability to get at the points referred to has been delayed until now from the parties who have control of the landings where shippings have been in this Currioman Bay. The statements of those are thus for a period of three years past, viz:

Ship timber to go to Eastern ports by one firm ..... tons..	20,000
Tree-nails	75,000 to 80,000
Last blocks	12,000 to 15,000
Hub blocks	2,000 to 2,500

Ivy root	tons	200 to	250
Poplar wood	cords	5,000 to	6,000
Pine wood	do	7,000 to	8,000
Oak wood	do	500 to	600
Railroad ties		28,000 to	30,000
Fence rails		15,000 to	16,000
Sawed lumber	feet	75,000 to	80,000
Oysters	bushels	40,000 to	45,000

This has been shipped by sailing craft only, of different classes and sizes. I have been in control of the only wharf in the bay, and only steamers have lied to it with few exceptions, such as cargoes of guano and fertilizers, and have been paid wharfage at a per centum on freights from steamers, which has been about $750, or the steamers have had over my wharf about $7,500 freight in three years, consisting of oysters, grain, and general produce, stock, &c.

I would say if there was a channel cut by dredging 300 to 350 feet long and 90 to 100 feet wide across a bar of 6½ feet of water at low-tide it would allow vessels of 9½ feet depth to come in the bay and be near the landings of shipping, where as it is they can only pass with 6½ feet at low-water. If the channel was cut and properly buoyed on both sides it would be greatly to the advantage of watermen to use the bay as a harbor of anchorage in storms, &c.

I hope some day to see the improvement made by the bar being cut away. Hoping this estimate I furnish will enable you to judge if it would not be well to have the improvement made,

I am, very respectfully, yours, &c.,

R. B. REED.

S. T. ABERT,
United States Civil Engineer.

SURVEY OF NOMINI RIVER, FROM THE FERRY ACROSS THE SAME TO THE HEAD OF TIDE-WATER.

UNITED STATES ENGINEER OFFICE,
Washington, D. C., January 7, 1881.

GENERAL: I have the honor to submit the following report of a survey of Nomini River, from the Ferry to the head of tide-water, made in September, 1880, in accordance with a provision of the act of appropriation for rivers and harbors approved June 14, 1880, and assigned to me by your letter of June 17.

The survey extended from Holly Wharf, 1,000 feet below the Ferry, to Beale's Mill.

Nomini River unites at its mouth with Currioman Bay, and flows into the Potomac about 82 miles below Washington City.

It is situated in Westmoreland County, Virginia, and in the collection district of Tappahannock. The lower portion of the river has been improved by dredging a channel from the can-buoy in Currioman Bay to Hickory Point, a distance of 4,400 feet. Sixteen hundred feet of this distance is outside of White Point at the mouth of Nomini River. This work was begun under an appropriation approved March 3, 1873, and has been continued by successive appropriations up to the present date. A marked improvement has been effected in the trade of this section of country by this improvement. The channel which formerly had a ruling depth of 3 feet has now a depth of from 9 to 10 feet. Four steamers, 3 from Washington and 1 from Baltimore, now ply to Nomini River. The larger part of the freight is shipped from Nomini Wharf, and lesser quantities from Mount Holly Wharf, 1,000 feet below, and Peach Point Wharf, 1,070 feet above. Two of the smaller steamers land and receive freight at Prospect Wharf (1½ miles above Nomini Wharf), to which point the channel is from 6 to 7 feet deep, and from 100 to 500 feet wide,

with the exception of one bar where 2,000 cubic yards should be dredged in order to make the depth correspond with the rest of the channel. The improvement now desired by the residents is to make a channel from Prospect Wharf to Davis's White Point, a distance of 8,830 feet, with a depth of 7 feet at low-water, and a width of 100 feet.

Large vessels once came to Davis's White Point, but the placing of fishing weirs in the river, and the deposition of sediment by the floods, have caused a shoaling of the channel. About 25 square miles will be benefited by this improvement. From Davis's White Point to a bridge on the Warsaw road the distance is 3,400 feet, following a narrow channel through a marsh. A cut through this marsh is also desired, and an estimate for a channel 40 feet wide and 5 feet deep is given below, but the cost seems large in proportion to the interest to be benefited. The sum would be better expended in deepening and widening the channel from the can-buoy in Currioman Bay to White's Point at the mouth of the river.

The proposed work above Davis's White Point might be left until the trade of the country was more fully developed, or at least until the channel was improved up to that point. Davis's White Point is a public landing easily accessible to the 25 square miles of country above mentioned, which is not the case with the other landings.

ESTIMATES.

The following estimates give the probable cost of dredging a channel 100 feet wide and 7 feet deep from Prospect Wharf to Davis's White Point, distance 8,830 feet; and, from Davis's White Point to the bridge on the Warsaw road, width 40 feet, depth 5 feet, distance 3,400 feet; and also the cost of dredging through the bar below Prospect Wharf.

From Prospect Wharf to Davis's White Point, 8,830 feet by 100 feet by 7 feet:	
159,900 cubic yards at 25 cents	$39,975
2,000 cubic yards (bar below Prospect Wharf) 25 cents per yard	500
	40,475
Add 10 per cent for contingencies	4,048
Total	44,523
From Davis's White Point to bridge on branch of Warsaw road 3,400 feet by 5 feet by 40 feet:	
20,400 cubic yards at 30 cents	$6,120
Add 10 per cent for contingencies	612
Total	6,732
Total of both estimates	51,255

A gauge was left at Nomini Wharf having 3 feet, corresponding to mean low-water, as observed during the period occupied in making the survey. The plane of mean low-water was established at $\frac{5}{10}$ higher than that at Currioman. Both should be corrected by a longer course of observations. The chart accompanying this report was reduced from one on a scale of $\frac{1}{3600}$.

I am indebted to Mr. W. W. Anderson, and Mr. W. P. Watson, assistant engineers for the notes of this survey.

Respectfully, your obedient servant,

S. T. ABERT,
United States Civil Engineer.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

COMMERCIAL STATISTICS.

FREESTONE, VA., *October* 30, 1880.

DEAR SIR: Referring to your favor of the 12th instant, I am of the opinion that, owing to the topography of the country to the north and south of Neabsco Creek, the inhabitants residing on either side for 6 or 7 miles, and those west from head of tide-water for a distance of 10 to 15 miles, will naturally come to the proposed "Public Landing," and be greatly benefited by the proposed improvement of the stream.

The benefits to be derived I think amply justify the general government in making this small outlay.

We have a soil here not surpassed by any along the Potomac River, and, a few miles west, a belt of unusually productive land that is fast being brought under cultivation. We are producing good crops of wheat, rye, corn, hay, &c., together with such fruits as apples, peaches, quinces, pears, grapes, &c.

The poorer lands are readily made productive by the liberal use of lime and clover, and we need the cheap water transportation to enable us to market our bulky productions of the farm, forest, and quarry.

In the near future the large slate deposits (located only 1 mile from tide-water) will be opened and developed, and this enterprise alone will give employment to hundreds of workmen.

Large quantities of railroad ties, piles, staves, hoops, cord-wood, and sawed lumber and timber are shipped annually in light-draught vessels, but the additional cost of lightering same over mud-bars to deep water in the bay is a serious drawback.

The iron deposits near at hand will doubtless be of considerable importance, and the old furnace in operation generations ago be called into requisition again. * * * Seventy years ago good sized vessels were loaded with grain, tobacco, and iron, 100 yards below the proposed "Public Landing" on Telegraph road. * * *

I am, very respectfully,

E. M. WILLIS.

Mr. S. T. ABERT,
United States Civil Engineer.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 43.

SURVEY OF MILWAUKEE BAY AND BAYOU SOUTH OF MILWAUKEE.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of surveys of Milwaukee Bay and Bayou south of Milwaukee.

JANUARY 17, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 15, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, copy of a communication from the Chief of Engineers dated the 14th ultimo, and of accompanying report from Maj. D. C. Houston, Corps of Engineers, upon surveys and examinations, made in compliance with the requirements of the river and harbor act of June 14, 1880, of Milwaukee Bay and the bayou south of Milwaukee Harbor, Wisconsin, for a harbor of refuge.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., December 14, 1880.

SIR: To comply with provisions of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of a report to this office from Maj. D. C. Houston, Corps of Engineers, of the results of a survey for improving the bayou south of Milwaukee Harbor for additional purposes of a harbor of refuge at Milwaukee, and also of Milwaukee Bay.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY AND EXAMINATION OF MILWAUKEE BAY, AND BAYOU SOUTH OF MILWAUKEE HARBOR, WISCONSIN, FOR A HARBOR OF REFUGE.

UNITED STATES ENGINEER OFFICE,
Milwaukee, Wis., October 20, 1880.

GENERAL: I have the honor to submit the following report on survey and examination for "improving the bayou south of Milwaukee Harbor for additional purposes of a harbor of refuge at Milwaukee; also, Milwaukee Bay," called for by the river and harbor act approved June 14, 1880.

The present harbor of Milwaukee consists of the lower portions of the Milwaukee, Menomonee, and Kinnickinnic rivers, having a common outlet into Lake Michigan. The total length of the portions of these rivers now forming the harbor, including the navigable canals in the Menomonee Valley, is about 11 miles. The present outlet is entirely artificial, being 3,000 feet north of the old or natural mouth, now closed up. This outlet was made in the years 1855, 1856, and 1857, principally at the expense of the city of Milwaukee, the United States expending only $15,000, and the city $445,971,20. Two piers were constructed, each 1,120 feet in length, and a channel dredged between them to a depth of 12 feet. Since then the government has extended the piers and deepened the channel, so that there is now a channel between the piers 18 feet deep for a width of 200 feet. The width between the piers at their outer ends is 284 feet.

Previous to the opening of this outlet, the commerce of Milwaukee was principally transacted at wharves on the lake front. The accommodations were limited and inconvenient, and vessels were entirely unprotected from storms. The present harbor entrance was designed mainly to enable vessels to enter the rivers where they would be in safety while in port, and also to utilize the rivers for commercial purposes. As a harbor of refuge, Milwaukee Harbor is probably the best of its class (an improved river mouth) on the great lakes, but there are times during storms when it is dangerous to attempt an entrance, and a number of disasters have been the result of such attempts. During violent storms, and especially at night, vessels run the risk of striking the piers, or of entirely missing the entrance and being stranded on the shore. Generally, however, vessels do not attempt an entrance at such times, preferring to incur the dangers of the lake to the risks of entering the harbor. Many of these are lost or disabled for want of a harbor here accessible at all times.

This statement agrees with those of masters of vessels of long experience on the lakes. There is no harbor on Lake Michigan between the Manitou Islands and Chicago, a distance of about 220 miles, which is easily accessible to vessels of all classes in all states of the weather. Chicago Harbor does not fully meet this requirement at present, though it will do so when the works now in progress are completed. The large commerce of Milwaukee requires such a harbor at this place, irrespective of the great benefit which it would manifestly be to the general commerce of the lakes.

BAYOU SOUTH OF MILWAUKEE HARBOR.

The body of water thus designated is the channel of the Milwaukee River south of the present harbor entrance, extending to the old river mouth. It forms a part of the present inner harbor of Milwaukee, heretofore described, and in order to reach it during storms vessels have to encoun-

MILWAUKEE

M&St.P.R.R.

Menomonee River

M&St.P.R.R.

M&St.P.R.R.

MILWAUKEE RIVER

C.&N.W.R.R.

Kinnickinnic River

C.M.&St.P.R.R.

Rail Road

Chicago & Northwestern

North Point

LIGHT HOUSE

BEACON

MILWAUKEE BAY.

Old River Mouth

Rock Cut

a

b

c

d

Note

The proposed Breakwater and Pier are indicated by the lines ab and cd.

Scale 8/10 Inch to 1 Mile.

NOTE

Outside the 18 ft. Curve (dotted) the soundings are expressed in Fathoms.....

House Ex. Doc. Nº 43, 3rd Sess, 46th Cong.

ter all the difficulties heretofore mentioned. At its southern end it connects with the Kinnickinnic River, and now properly forms an extension of that stream in consequence of the closing of the old mouth of the Milwaukee River and the filling up of Kinnickinnic Bay. The location of this channel is marked Bayou on the small map attached to this report, and its present condition is shown on the accompanying tracing entitled "Bayou south of Milwaukee Harbor."

This tracing is copied from one furnished by Mr. H. J. Hilbert, city engineer of Milwaukee.

The soundings have been verified by my assistant, Mr. W. H. Hearding. This channel is about 3,400 feet long, 368 feet wide, with an average depth of about 10 feet. By following the line of deepest water, vessels drawing 13 feet can pass through it into the Kinnickinnic River. The west side of the channel is occupied by private docks. The east side is not docked, but the land is owned by private parties. The area of the channel is about 25½ acres. Its improvement by dredging to its full width, to a depth of 15 or 16 feet, and docking the east side, will doubtless soon be necessary to meet the requirements of the increasing commerce and business of the city.

The river and harbor act only contemplates the improvement of this channel for "additional purposes of a harbor of refuge." As it lies entirely *inside* the present harbor entrance, it is evident from what has been said that its improvement would not fulfill the principal requirements of a harbor of refuge at Milwaukee. It would increase somewhat the accommodation of the present inner harbor, but give no greater facility to the entrance of vessels than exists at present.

In view of the large expenditure made by the city in improving the harbor entrance, a work usually done by the United States, it would be no more than just that the government should appropriate money for the improvement of this channel or any other portion of Milwaukee Harbor, but this would not be an improvement for "additional purposes of a harbor of refuge," contemplated by the act of Congress. All the requirements of a harbor of refuge can be secured and the commerce of Milwaukee derive great benefit by the construction of works in

MILWAUKEE BAY.

This bay is formed by an indentation of the west coast of Lake Michigan, the distance between the headlands being nearly 8 miles, and the extreme width west of the line joining the headlands about 2 miles. Although an open roadstead, the bay may properly be termed the outer harbor of Milwaukee, as the anchorage ground is good and protected by the coast from storms from all directions, except from northeasterly to southeasterly. During ordinary storms from the latter direction vessels come to anchor in the bay, but in violent gales, which frequently occur, there is danger of vessels dragging their anchors or becoming unmanageable or disabled and failing to effect an anchorage in a heavy sea at the proper place. At such times tugs are either unable to render assistance to vessels, or their services may not be available at the critical moment.

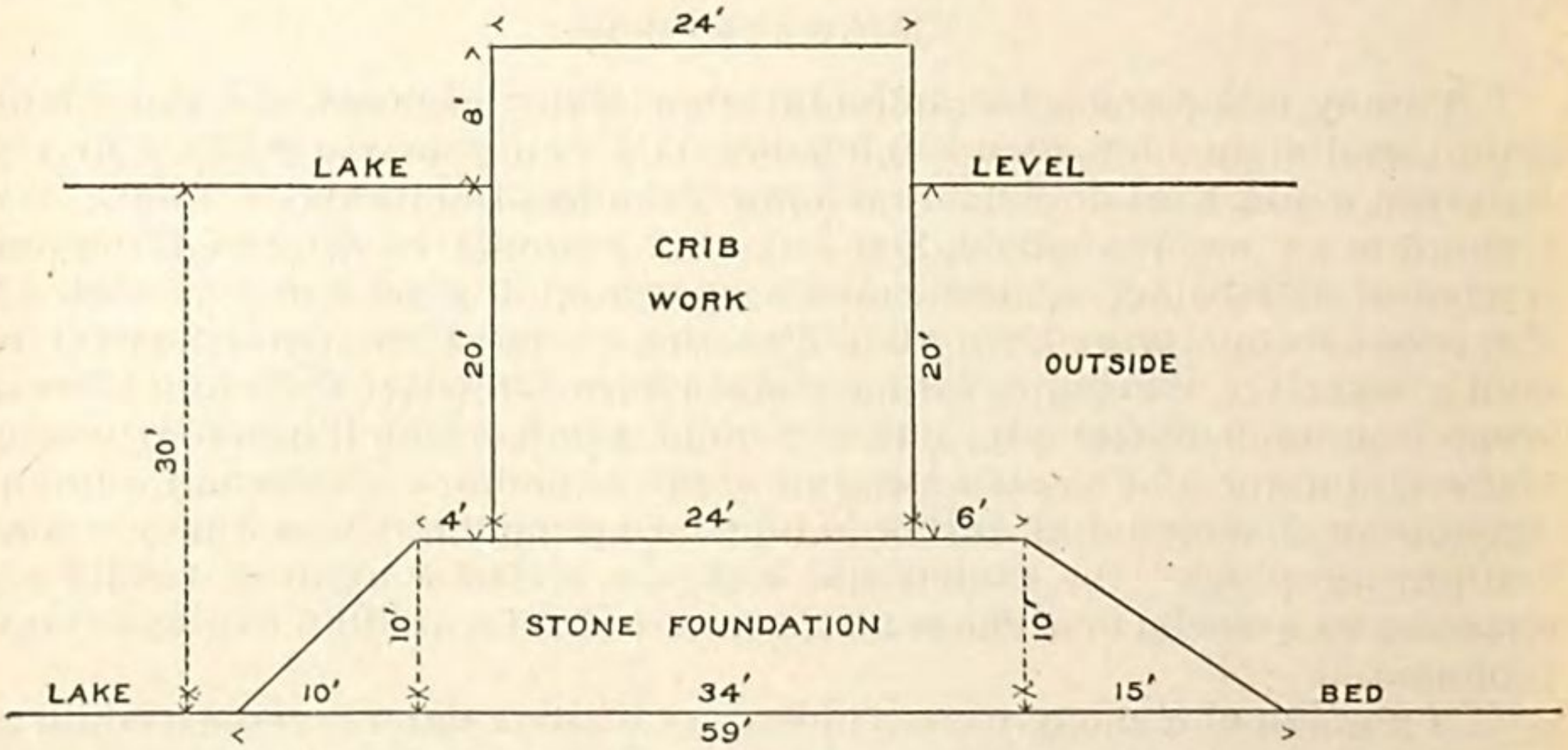
If a portion of the bay were inclosed by breakwaters, vessels could run in behind them, where they could drop their anchors or receive assistance.

A harbor of refuge of any desirable extent can be constructed in the bay. One plan, which I have indicated on the map of the bay accompanying this report, would be to construct a breakwater on a north and south line, passing through North Point, the northern end being in 21

feet of water, and the southern end in about 30 feet. This breakwater would be 5,500 feet in length. To cover the opening between this breakwater and North Point a pier should be projected from North Point in a southeasterly direction out to a depth of 24 feet of water, its length being 2,400 feet. The end of the pier would be 1,800 feet east of the north end of the breakwater and 940 feet north of it, affording a wide opening for the egress or ingress of vessels at the northern end of the harbor. These works, in addition to the shore line of the bay, would afford protection from storms from all directions. They would cover a sheltered area as against northeasterly storms of about 440 acres over 18 feet deep, and about 540 acres over 12 feet deep. The protection from easterly storms would not be so great, and from southeasterly would be still less, but sufficient it is thought for all the needs of navigation. Vessels in northeasterly storms could round to under the south end of the breakwater or pier, where there is ample depth of water and plenty of sea room. In easterly or southeasterly storms they could easily run behind the breakwater. Such a harbor offers much greater security to vessels than a river mouth, even if the latter be of considerable width. The services of a tug are generally necessary to assist sailing vessels to enter the mouths of rivers during storms, and these are not always available at the right time. If a breakwater and pier were constructed as proposed, tugs would lie behind them and be ready to assist vessels as soon as they arrived at the harbor, and, if necessary, tow them into the inner harbor.

The breakwater and pier would also protect the present harbor entrance from northeasterly storms; prevent the formation of bars; arrest the drift from the north, and render unnecessary the further extension of the north-harbor pier and possibly the south pier, both of which it will be necessary to extend, from time to time, unless some such protection is given. The facility of entering the present harbor would also be greatly increased, as there would be comparatively smooth water at the entrance.

There will be no unusual difficulties in constructing these works, as the bottom is favorable, and the exposure no greater than at other points where such works have been successful.



SCALE 1" = 20'

The above sketch shows the general cross-section of the proposed breakwater. The width of the pier extending southeasterly from North Point should vary according to the depth of water.

As to the necessity and commercial importance of such a harbor at Milwaukee, I respectfully refer to the accompanying report from a committee of the Chamber of Commerce of Milwaukee. In this report the risk involved in entering the present harbor during severe gales is pointed out, and also the extent of disasters attributable to the absence of a harbor of refuge in this vicinity. The amount of commerce to be benefited is stated, and it will surprise many people to learn that—

> The combined annual commerce of the custom districts of Milwaukee and Chicago to be directly benefited by the proposed improvement exceeds by 4,000,000 tons the combined tonnage of the ports of Boston, Baltimore, and Philadelphia, and nearly equals the total foreign commerce of New York City. The tonnage annually entered and cleared at the Milwaukee custom-house district is larger thant hat of the districts of either Boston, Philadelphia, or Baltimore. According to the report of "Commerce and Navigation of the United States for 1879," the tonnage entered and cleared in the districts named was as follows:

	Tons.
Milwaukee	7,505,233
Baltimore	5,968,274
Boston	5,681,001
Philadelphia	4,615,320

> For the fiscal year ending June 30, 1880, the tonnage entered and cleared in the district of Milwaukee was 7,961,423 tons, and at the port of Chicago for the same period 8,474,718 tons, making a total of 16,437,141 tons entered and cleared at the ports of the west shore of Lake Michigan in that period. These figures are from the official records, and are sufficient to illustrate the magnitude of the commerce to be directly affected by the proposed improvement, and to emphasize its claims to the fostering care and protection of the general government.

These figures are sufficient to show that a harbor at Milwaukee should be complete in all respects, as far as practicable. The estimate of $600,000, given in the report of the Chamber of Commerce committee, does not include the pier at the north end of the harbor.

The estimated cost of these works is as follows:

5,500 running feet of breakwater, at $100	$550,000	
2,400 running feet of pier, at $75	180,000	
		730,000
Contingencies		70,000
		800,000

The foregoing plan is submitted as one which appears, from investigation up to this time, as fully meeting all the requirements of a harbor of refuge at Milwaukee. A smaller harbor could be made at less cost, which would be of great benefit. The pier alone would afford great protection against northeasters.

A breakwater 3,000 feet long, on a north and south line through North Point, with a short return to the west at the northern end, would afford protection to a considerable number of vessels, and if it should form the southern part of the breakwater, as indicated on the map, would cover the harbor entrance. It is assumed, however, that the final plan and location of such extensive works would not be adopted until they had been considered by a board of engineers.

Should the plan I have submitted be adopted and ample funds be provided, the pier extending southeasterly from North Point should be constructed first. This would give immediate protection to vessels from northeast storms, and also facilitate the construction of the breakwater, the northern portion of which would be greatly sheltered by the pier. The breakwater should be commenced (say) 500 feet south of the north end, as indicated on the map, as it may be found unnecessary to extend it as far north as is shown.

SUMMARY.

It is apparent from the foregoing that the construction of a breakwater and pier in Milwaukee Bay will fully meet all the requirements of a harbor of refuge at Milwaukee—ease of access, deep water, and ample room. The improvement of the bayou or old channel of the Milwaukee River, would evidently not meet these requirements.

A breakwater in Milwaukee Bay, located as proposed, would also be a direct improvement to the present harbor, as has been explained.

The additional security to navigation and commerce which would be afforded by a harbor of refuge at Milwaukee extends to the greater portion of the commerce of the great lakes, including that between Lake Michigan ports and all the other great lakes and Saint Lawrence River and the entire commerce of Lake Michigan itself. Some idea of the extent of the commerce to be benefited can be had by reference to a previous statement that—

> The combined annual commerce of the custom districts of Milwaukee and Chicago exceeds by 4,000,000 tons the combined tonnage of Boston, Baltimore, and Philadelphia, and nearly equals the total foreign commerce of New York City;

And

> For the fiscal year ending June 30, 1880, the tonnage entered and cleared in the district of Milwaukee was 7,961,423 tons, and at the port of Chicago 8,474,718 tons, making a total of 16,437,141 tons entered and cleared at the ports of the west shore of Lake Michigan in that period.

The estimated cost of these improvements is as follows: Breakwater and pier in Milwaukee Bay, $800,000.

I am, general, very respectfully, your obedient servant,

D. C. HOUSTON,
Major of Engineers, Brevet Colonel, U. S. A.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

HARBOR OF REFUGE IN MILWAUKEE BAY—ITS GREAT IMPORTANCE TO THE GENERAL COMMERCE OF THE LAKES.

At a meeting of the Chamber of Commerce of the city of Milwaukee, held October 9, 1880, the following report was submitted to the association by a special committee previously appointed:

To the Chamber of Commerce of the City of Milwaukee:

Your special committee, appointed in response to a letter from Col. D. C. Houston, superintendent of harbor improvements, asking for information bearing upon the proposed harbor of refuge at Milwaukee, begs leave to report—

That the river and harbor act passed at the last session of Congress, among other things, provides for an examination or survey by the United States Engineer Corps under the direction of Colonel Houston, and estimates of the costs of improvements proper to be made as follows: "Improving the bayou south of Milwaukee Harbor for additional purposes of a harbor of refuge at Milwaukee; also, Milwaukee Bay."

Your committee has given the subject careful consideration, and has consulted with Colonel Houston as to the practicability of the plan suggested by the board of directors of the chamber of commerce of converting a portion of the bay into a spacious harbor of refuge by the construction of a line of breakwater extending southward from the North Point. The members of your committee were much encouraged by the favorable views expressed by Colonel Houston as to the feasibility of the proposed improvement and its utility for the purposes contemplated. They were further convinced that the great importance of the work to the general commercial and navigation interests of the lakes is its strongest recommendation to favor; that all the leading ports of the lower lakes, Buffalo, Erie, Oswego, Cleveland, Toledo, Detroit, and others, are equally interested with those of Lake Michigan in the security to

navigation which a commodious and easily-accessible harbor of refuge in the Bay of Milwaukee would afford. At no other point on the great lakes could a harbor of this character have a wider scope of usefulness or be more easily constructed. The committee was relieved from any doubts as to the practical nature of the work to be done by the accurate and complete information furnished by Colonel Houston as to the depth of water, formation and general characteristics of Milwaukee Bay in the vicinity of the harbor. The present entrance to the inner harbor, known as the "Straight Cut," originally constructed by the city of Milwaukee at an expense, including subsequent dredging, of $456,000, and extended and improved by the United States Government from time to time, is about half a mile north of the natural mouth of Milwaukee River (now closed up by the accumulation of sand), and consists of two parallel piers extending 1,720 feet eastward from the shore line into the bay, making a channel 284 feet wide at the mouth of the piers and 260 feet wide where it unites with the river. By constant dredging a depth of 18 feet of water has been maintained at the outlet of these piers, the unbroken force of every northeasterly storm causing the formation of sand bars at the entrance to the channel.

The old river bed south of the "Straight Cut" uniting with the Kinnikinnic Marsh and Creek, which forms an important branch of the *inner* harbor of Milwaukee, is the locality referred to by the act of Congress above quoted and incorrectly designated as the "bayou south of Milwaukee Harbor." In the opinion of your committee, there is not a semblance of reason or propriety in asking the government to improve that or any other part of the inner harbor in the general interests of navigation. At no distant day the river channel south of the "Straight Cut" will be bridged, as it has been to the northward, and will be all required for commercial and manufacturing uses.

When a vessel has succeeded in entering the "Straight Cut" she is safe from storm and wave, and needs no further refuge than the ordinary harbor facilities afford. To make this entrance safely accessible in storms of the greatest violence and at the same time extend *outside* protection to vessels engaged in the commerce of other ports, that are often driven here to seek shelter, is the only work that the government can legitimately be called upon to undertake for the purposes of a harbor of refuge at this port. A breakwater, such as has been suggested, will accomplish all these objects, and can be constructed, according to Colonel Houston's estimates, at a cost of $600,000. A work of this description, commencing in 18 feet depth of water off the North Point and extending southward 6,400 feet would protect the entrance to the inner harbor in all storms that render navigation dangerous in this locality, and also inclose an available outside harbor of refuge of 400 acres in extent, having a depth of water varying from 18 to 30 feet, or of 500 acres, computing its area from a shore line of 12 feet depth of water. Sailing vessels seeking this harbor of refuge would not be subjected to the risk of entering the "Straight Cut," an attempt which in the present unprotected state of the entrance is always attended by more or less risk during the prevalence of northeasterly gales, nor would they be obliged to incur any expense of towing, as in the case of having to enter the inner harbor merely for shelter. In reference to the risks involved in entering the present harbor at such times, a writer of acknowledged authority in marine matters, the marine editor of the Chicago Tribune, in a letter to a member of this committee, refers to one instance in which no less than five vessels stranded at one time in the bay, and adds: "I remember another season when the propeller Colorado and two other vessels, all laden with valuable cargoes, stranded in a single night and all filled with water. With a breakwater, such as is proposed, none of these disasters would have occurred. I consider your proposition an excellent one, and hope Congress can be prevailed upon to make the necessary appropriation of money for the construction of an outer harbor. The government is indebted to Milwaukee for a heavy advance of money for harbor improvements, which it manifests no inclination to return. Therefore it would be only the fair thing to vote money for an outer harbor that will benefit the entire commerce of Lake Michigan."

Equally favorable expressions have been received from residents of other lake ports, all bearing testimony to the importance of the proposed improvement in the bay to the general commerce of the lakes. Your committee desires here to submit, as a part of this report, a list of disasters in Milwaukee Bay since the opening of the Straight Cut, of which it has been able to find authentic reports:

LIST OF DISASTERS IN MILWAUKEE BAY, IN VICINITY OF HARBOR, SINCE OPENING OF THE STRAIGHT CUT.

October 27, 1856, propeller Alleghany went ashore in Milwaukee Harbor, unable to make either mouth of river or entrance to Straight Cut, and was wrecked.

December 2, 1856, schooner Welland was wrecked in Milwaukee Harbor in same manner.

Monday, April 12, 1858, four vessels went ashore in Milwaukee Bay, unable to make the entrance of Straight Cut, viz, schooner C. Harrison; schooner Magic; schooner Stella; and schooner Planet.

Saturday, April 17, 1858, bark American Republic went ashore near Straight Cut.

Saturday, July 10, 1858, schooner Milwaukee Belle went ashore just outside of Straight Cut.

July 9, 1859, propeller Rocket went ashore near North Point.

Tuesday, September 20, 1859, brig Resolute went ashore, unable to make entrance of Straight Cut. Steamship Detroit struck one of the piers at mouth of Cut and damaged her bow.

Thursday, December 17, 1863, steamer Sea-Bird went ashore near North Point.

Wednesday, April 27, 1864, three vessels went ashore in Milwaukee Bay, viz, bark Cream City; bark Pride of America; schooner Monsoon. All of these vessels were unable to make entrance of Straight Cut, owing to severe northeaster. The two first named were loaded with wheat.

May 9, 1864, bark Parana was wrecked; loss, $40,000; loaded with oats and pork. Also the brig N. M. Stannard, loaded with wheat, and schooners Union, loaded with engines and heavy freight, and Conquest, loaded with wheat. The Union was a total loss.

Thursday, October 10, 1867, schooner Wm. Crosthwaite went ashore just south of Straight Cut.

Monday, November 25, 1867, propeller Colorado, barge Menominee, schooner Jason Parker, schooner Conquest, schooner Eugene, and schooner Tempest went ashore during a northeast gale. Schooner Swallow struck pier at mouth of Cut, and sustained a large amount of damage.

March 24, 1868, schooner Transit wrecked by collision with pier at mouth of Cut.

April 13, 1868, schooner Selt went ashore, unable to make entrance of Straight Cut.

October 7, 1868, schooner G. Knapp sank from collision with pier at mouth of cut.

October 21, 1868, schooner Josephine went ashore in the bay just south of Straight Cut. Loaded with wheat.

September 19, 1869, propeller Messenger went ashore near North Point.

May 6, 1870, schooner Ellen Pike went ashore near North Point.

Tuesday, November 29, 1870, bark Chicago Board of Trade went ashore in Milwaukee Bay while attempting to enter the harbor.

May 1, 1871, bark Lottie Wolf went ashore in the bay.

Thursday, April 11, 1872, schooner Two Charlies wrecked in Milwaukee Harbor, near Straight Cut.

February 3, 1872, schooner Toledo wrecked in Milwaukee Bay.

April 15, 1872, schooner Liberty wrecked in Milwaukee Bay; one man lost.

April 15, 1872, schooner Selt went ashore near North Point.

May 2, 1872, propeller Empire State went ashore.

September 29, 1872, schooner Supply went ashore in the harbor just north of Straight Cut.

October 1, 1872, schooner York State went ashore in Milwaukee Bay.

November 13, 1872, schooner Free Democrat went ashore at foot of Seventh Ward Park.

November 11, 1873, the schooner Gerlach ran into the pier at Straight Cut; the schooner Challenge ran into the Gerlach, and the Challenge waterlogged and capsized. The schooner Petrel went ashore off Division street.

January 3, 1874, propeller Bertschy went ashore in the bay.

April 11, 1874, schooner J. F. Prince went ashore in the bay.

April 12, 1874, schooner Radical went ashore in Milwaukee Bay.

April 23, 1874, schooner H. M. Becker and tug Ida H. Lee wrecked in Milwaukee Harbor.

July 25, 1874, the iron propellor Merchant ran ashore and sank near South Point. Schooner Hurrah Boys beached north of Straight Cut.

October 28, 1874, schooner H. O. Moore went ashore near North Point during a severe northeaster.

May 14, 1875, schooner Mocking Bird went ashore in the bay north of Straight Cut.

September 10, 1875, bark Tanner was wrecked in Milwaukee Bay, and her commander, Captain Howard, was drowned while attempting to swim ashore.

September 11, 1876, United States steamer Michigan went ashore in Milwaukee Harbor near Straight Cut.

March 27, 1878, schooner Three Bells was wrecked in Milwaukee Bay near mouth of Straight Cut.

April 16, 1880, schooner Evergreen went ashore while trying to make the harbor.

October 29, 1880, barge Thomas A. Scott ran down and sunk at her anchorage in the bay by steamer Avon.

In addition to the foregoing disasters, which were all of a serious nature, there has been a great number of minor casualties, such as vessels colliding with piers at entrance of Straight Cut, or with other vessels while entering the cut. Scarcely a severe northeaster occurs without accident of this kind.

Owing to the danger of attempting to enter this harbor in the northeasterly gales, which frequently sweep over this lake during the spring and fall months, hundreds of vessels have chosen to weather the storms in the open bay or lake rather than seek a "refuge" attended by such risks, and many of these annually suffer disasters, involving losses of both life and property that might have been avoided had there been any safely accessible harbor of refuge at Milwaukee. Hence the disasters that have actually occurred in seeking this harbor in such emergencies, though serious enough in themselves to warrant the national government in providing better protection, do not nearly represent the extent of the disasters properly attributable to the absence of such protection on the entire west shore of Lake Michigan.

In this connection we may properly call attention to the fact that the combined annual commerce of the customs districts of Milwaukee and Chicago, to be directly benefited by the proposed improvement, exceeds by 4,000,000 tons the combined tonnage of the ports of Boston, Baltimore, and Philadelphia, and nearly equals the total foreign commerce of New York City. The tonnage annually entered and cleared at the Milwaukee custom-house district alone is larger than that of the districts of either Boston, Philadelphia, or Baltimore. According to the report of "Commerce and Navigation of the United States for 1879," the tonnage entered and cleared in the districts named was as follows:

	Tons.
Milwaukee	7,505,233
Baltimore	5,968,274
Boston	5,681,001
Philadelphia	4,615,320

For the fiscal year ended June 30, 1880, the tonnage entered and cleared in the district of Milwaukee was 7,961,423 tons, and at the port of Chicago for the same period 8,474,718 tons, making a total of 16,437,141 tons entered and cleared at the ports of the west shore of Lake Michigan in that period. These figures are from the official records, and are sufficient to illustrate the magnitude of the commerce to be directly affected by the proposed improvement, and to emphasize its claims to the fostering care and protection of the general government.

There is another consideration that should not be lost sight of in connection with this subject. In order to meet the just demands of the country for cheap transportation, the government recognizes the necessity of maintaining a sufficient depth of water at the harbors of these great inland seas to admit the entrance of a much larger class of vessels than were formerly engaged in our lake commerce. In pursuance of this policy large expenditures of money are annually required for the extension of piers and dredging to maintain a proper depth of water at the entrance of this and other lake harbors. It is understood that the government engineer in charge of the harbor improvements on this lake considers it necessary to recommend a further extension of both piers at the entrance of this harbor, unless Congress should recognize the importance and necessity of an outer harbor of refuge in the bay. In that case Colonel Houston feels confident that the construction of the proposed breakwater would effectually prevent any further accumulations of sand at the entrance of the harbor, and thereby save to the government any further outlays for dredging at this harbor; nor would it be necessary, in his opinion, to extend the piers of the "Straight Cut" beyond their present limits.

The reference in the river and harbor act to the "improvement of the bayou south of Milwaukee Harbor" for the purpose of a harbor of refuge, by its language, was evidently due to an erroneous impression of the actual locality of said bayou derived from a memorial to Congress passed by the State legislature without due consideration or a correct knowledge of the subject. The same memorial was presented to the chamber of commerce for its adoption and was promptly condemned by your directors as unworthy of their approval, for the reason that it conveyed an incorrect impression of the character and locality of the so-called bayou, and proposed that the government should undertake an improvement in the name of a harbor of refuge, which, in the estimation of your committee, has no merit or claims to any such recognition.

In conclusion, your committee recommends the adoption of the accompanying memorial to Congress, and that copies of the same, together with this report, be sent to the boards of trade of the principal lake ports asking their co-operation. All of which is respectfully submitted.

ANGUS SMITH,
ALEX. MITCHELL,
J. B. MERRILL,
A. K. SHEPARD,
A. McD. YOUNG,
ALBERT CONRO,
Committee.

MEMORIAL TO CONGRESS.

To the honorable the Senate and House of Representatives in Congress assembled:

The memorial of the Chamber of Commerce of the city of Milwaukee respectfully represents:

That the importance of making an accessible harbor of refuge in Milwaukee Bay, by the construction of a breakwater, is such as to demand the immediate attention of the United States Government. That the improvement contemplated is necessary alike to the protection of the immense commerce of Lake Michigan and the existing harbor works of the port of Milwaukee. That the natural formation of the shore of Milwaukee Bay, adjacent to the inner harbor of Milwaukee, peculiarly adapts that part of the bay to the purposes of a harbor of refuge with comparatively little improvement, requiring artificial protection upon one side only, in order to afford shelter from every storm to vessels seeking this refuge. That the construction of such a breakwater will effectually shield the entrance of the inner harbor from the force of the northeasterly gales, the only storms that are dangerous to navigation in this locality, thus making it perfectly safe at such time for vessels either to enter the inner harbor or come to anchor behind the proposed breakwater in the bay.

That the limited protection extended by the government to the interest of navigation in earlier years rendered it necessary for the city of Milwaukee, in order to protect and maintain her trade and commerce, to expend large sums of money in the construction and improvement of the present harbor. These improvements cost the city the total sum of $445,971.20, between the years 1855 and 1876, for work that should have been done by the United States, and which the government has adopted and improved at various times at an additional expense of $265,987.45, making a total cost of the harbor improvements of Milwaukee up to the present date $711,955.65, of which sum it is seen the city of Milwaukee has paid 62 per cent. and the United States 38 per cent.

That these improvements, although of a permanent character, unless protected by an outer breakwater, will require the expenditure of large additional sums of money for the extension of the piers and the removal of the sand bars that are constantly formed by exposure to the unbroken force of every storm. That the construction of a breakwater extending from the north point of Milwaukee Bay due south, a distance of about 6,400 feet, would protect the harbor entrance from the force of all dangerous gales, and, in the opinion of eminent engineers, effectually arrest the formation of sand bars at the mouth of the inner harbor, while forming a harbor of refuge between the breakwater and the shore sufficiently capacious to afford safe anchorage to the largest fleet of vessels that could possibly seek its protection in times of danger. The estimates of Col. D. C. Houston, superintendent of United States harbor improvements, show that a breakwater of the character and extent described can be constructed at a total cost not exceeding $600,000, and all who are conversant with the magnitude of the commerce of Lake Michigan, and the dangers of lake navigation, will admit that the absence of a safe harbor of refuge in Milwaukee Bay is liable to cause the loss of property in a single year of greater value than the cost of the improvement. That the commerce which would derive protection from the proposed harbor of refuge, as shown by the records of arrivals and departures in the custom districts of Milwaukee and Chicago, embraces a total annual tonnage of about 20,000,000 of tons, and represents a total money value of not less than $300,000,000.

In consideration of the additional safety which this harbor of refuge would afford to our lake commerce, its necessity as a protection to the present harbor improvements of the port of Milwaukee, and its importance to the general commercial and agricultural interests of the Northwest, your memorialists respectfully ask that your honorable body make, at the present session of Congress, an appropriation sufficient to commence the construction of said breakwater during the approaching season of navigation.

The report was accepted, and, together with the memorial, unanimously adopted by the chamber of commerce.

M. BODDEN,
President.

W. J. LANGSON,
Secretary.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 44.

ESTIMATES OF DEFICIENCIES IN APPROPRIATIONS.

LETTER

FROM

THE ACTING SECRETARY OF THE TREASURY,

TRANSMITTING

Estimates of deficiencies in appropriations.

JANUARY 18, 1881.—Referred to the Committee on Appropriations and ordered to be printed.

TREASURY DEPARTMENT,
January 17, 1881.

SIR: I have the honor to transmit herewith the estimates of appropriations required to complete the service of the fiscal year ending June 30, 1881, and prior years, amounting to $3,944,606.48.

Very respectfully,

H. F. FRENCH,
Acting Secretary.

Hon. SAMUEL J. RANDALL,
Speaker House of Representatives.

Estimates of appropriations required by the various departments to complete the service of the fiscal year ending June 30, 1881, and prior years.

General object. (Title of appropriation.)	Detailed objects of expenditure, and explanations.	Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large, or to Revised Statutes. Vol. or R. S.	Page.	Sec.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the fiscal year for which the appropriation is required.
	LEGISLATIVE.							
Salaries and expenses of agents, Southern Claims Commission.	Amount due Enos Richard for salary and expenses, being a deficiency for the fiscal year 1880.	June 21, 1879	21	23	1	.....	$215 96	$6,000 00
	EXECUTIVE OFFICE.							
Salaries Executive Office...	For compensation of a telegraph operator in the office of the President of the United States from March 4, 1881, to June 30, 1881, inclusive, at $1,400 per annum.	Submitted .... June 15, 1880	 21	 216	 1	.....	458 89	31,464 00
Contingent expenses Executive Office.	For contingent expenses of the Executive Office, including stationery therefor, being a deficiency for the current fiscal year.	June 15, 1880	21	216	1	.....	2,000 00	8,000 00
	Total Executive proper	.....	.....	.....	.....	.....	2,458 89	39,464 00
	STATE DEPARTMENT.							
Lithographing	To pay R. C. Morgan, disbursing clerk Department of State, for lithographing for that department and paid by him during the fiscal year 1880.	Appropriated .	20 21	184 23	1 1	.....	108 70	1,200 00
Books and maps	To pay R. C. Morgan, disbursing clerk Department of State, for books and maps paid for by him during the fiscal year 1879.	....do	20	183	1	.....	105 45	2,000 00
Postage.....	To pay R. C. Morgan, disbursing clerk Department of State, for postage paid by him on Congressional Records during the fiscal year 1878.	Submitted	.....	.....	.....	.....	11 20	.....
	FOREIGN INTERCOURSE.							
...tingent expenses United States consu-	For payment of amounts found due by the accounting officers of the Treasury Department on account of contingent expenses of United States consulates:							
	For the fiscal year 1880	Jan. 27, 1879	20	273	1	.....	25,022 30	*115,000 00
	For the fiscal year 1879	June 4, 1878 June 16, 1880	20 21	98 239	1 1	.....	2,190 23	136,929 80

	NOTE.—Although an appropriation of the amounts asked for will create an apparent expenditure on the books of the department, it will involve the payment of no money from the Treasury, being required only to reimburse the account for consular fees.							
	To pay drafts drawn on the Secretary of State by consular officers on account of contingent expenses of consulates, the same being a deficiency for the fiscal year 1880.	Jan. 27, 1879	20	273	1	.....	4,489 45	*Same am't.
	Total State Department	.....	.....	.....	.....	.....	31,927 33	255,129 80
	TREASURY DEPARTMENT.							
	INDEPENDENT TREASURY.							
Salaries office of depositary at Tucson.	For depositary, in addition to his pay as postmaster, $1,500, being a deficiency for the fiscal year 1879.	Submitted	.....	.....	.....	$1,500 00	.....	.....
	For depositary, in addition to his pay as postmaster, $700, being the difference between the amount of salary per annum of this officer, fixed by law at $1,500, and the amount appropriated for the fiscal year ending June 30, 1880, $800.	May 8, 1872 June 21, 1879	17 21	72 27	1 2	700 00	.....	.....
						———	2,200 00	800 00
	NOTE.—No appropriation was made for the salary of the depositary at Tucson for the fiscal year 1879, and as the office has not been discontinued by law, the item is submitted for an appropriation.							
	MINTS AND ASSAY OFFICES.							
Contingent expenses, mint at Carson.	Freight-charges due the Central Pacific Railroad Company, as follows:							
	For the fiscal year 1880	June 21, 1879	21	23	1	.....	23 74	42,500 00
	For the fiscal year 1879	June 19, 1878	20	191	1	.....	1,528 91	42,500 00
Contingent expenses, mint at San Francisco.	Freight-charges due the Central Pacific Railroad Company, being a deficiency for the fiscal year 1880.	June 21, 1879	21	23	1	.....	392 40	87,500 00
Freight on bullion, mint at Philadelphia.	Freight-charges due the Adams Express Company, as follows:							
	For the fiscal year 1880	June 21, 1879	21	23	1	.....	11,967 50	5,000 00
	For the fiscal year 1879	June 19, 1878	20	191	1	.....	3,286 04	5,000 00
	TERRITORIAL GOVERNMENTS.							
Legislative expenses, Territory of New Mexico.	To pay Samuel Ellison for translating the laws and journals of the January and February, 1880, session of the legislative assembly of the Territory of New Mexico; being a deficiency for the fiscal year 1880.	June 19, 1878 June 21, 1879 June 16, 1880	20 21 21	194 27 240	1 1, 2 1	.....	800 00	24,783 90
	NOTE.—The secretary of the Territory states that it has been the practice of Congress to make appropriation for this object ever since the organization of the Territory.							

Estimates of appropriations required by the various departments, &c.—Continued.

General object. (Title of appropriation.)	Detailed objects of expenditure, and explanations.	Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large, or to Revised Statutes. Vol. or R. S.	Page.	Sec.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the fiscal year for which the appropriation is required.
	TREASURY DEPARTMENT—Continued.							
	TERRITORIAL GOVERNMENTS—Continued.							
Legislative expenses, Territory of Washington.	For printing the journal of the house of representatives of the Territory of Washington, regular biennial session of 1879; being a deficiency for the fiscal year 1880.	June 19, 1878 June 21, 1879 June 16, 1880	20 21 21	194 27 240	1 1, 2 1	.....	$500 00	$21, 600 00
	NOTE.—The secretary of the Territory of Washington also submits the following deficiency estimates under this appropriation, viz: Printing journal of the house, biennial session of 1873, being a deficiency for the fiscal year 1874..... $500 Printing journal of the council, biennial session of 1875, being a deficiency for the fiscal year 1876 ..... 500 Printing journal of the council, biennial session of 1877, being a deficiency for the fiscal year 1878..... 350 1, 350							
Legislative expenses, Territory of Montana.	Additional amount required for legislative expenses of Montana Territory for the fiscal year 1881.	June 15, 1880	21	225	1	.....	4, 460 00	19, 710 00
	NOTE.—This estimate is submitted by the secretary of the Territory of Montana, and approved by the First Comptroller, in consequence of act of Congress approved December 23, 1880 (Public No. 6), extending the sessions of the legislative assemblies of the several Territories from forty to sixty days. The First Comptroller also recommends additional appropriations, for the fiscal year 1881, for the Territories of Arizona, Dakota, and Idaho (estimates from which have not been received), in the proportion of about one-half more than asked for in the regular estimates for that year, less the item of mileage.							

	DISTRICT OF COLUMBIA.							
Courts, District of Columbia.	To pay claim of C. S. Bundy for services as acting judge of the police court of the District of Columbia, during the absence of the judge, from August 31 to October 3, 1880, inclusive, 34 days, at $10 per day, $340, one-half of which is payable by the United States and one-half by the District of Columbia.	..... June 4, 1880	R. S., D. C. 21	122 161	1047, 1048 1	.....	$340 00	16,818 00
	NOTE.—See letter of the First Comptroller in relation to the foregoing estimate in appendix marked A.							
	INTERNAL REVENUE.							
Salaries and expenses of collectors of internal revenue.	Additional amount to pay salaries and expenses of collectors of internal revenue, being a deficiency for the current fiscal year (see Appendix B).	June 15, 1880	21	220	1	.....	50,000 00	1,900,000 00
Salaries and expenses of agents and subordinate officers of internal revenue.	Additional amount to pay salaries and expenses of agents and surveyors, for fees and expenses of gaugers, for salaries of storekeepers, and for miscellaneous expenses, being deficiencies as follows:							
	For the fiscal year 1881 (see Appendix B)	June 15, 1880	21	220	1	.....	745,957 00	1,700,000 00
	For the fiscal year 1880 (see Appendix B)	June 19, 1878 June 21, 1879 June 16, 1880	20 21 21	187 23 241	1 1 1	.....	135,000 00	1,820,000 00
	To pay amounts found due by the accounting officers of the Treasury on account of salaries and expenses of agents and subordinate officers of internal revenue, being a deficiency for the fiscal year 1879.	June 19, 1878 June 21, 1879	20 21	187 27	1 2	.....	475 00	1,650,000 00
Stamps, paper, and dies	Additional amount to pay for dies, paper, and stamps for the internal revenue service, being a deficiency for the current fiscal year (see Appendix B).	June 15, 1880	21	220	1	.....	131,878 08	375,000 00
Punishment for violation of internal-revenue laws.	Additional amount for detecting and bringing to trial and punishment persons guilty of violating the internal-revenue laws, or accessory to the same, including payments for information and detection, being a deficiency for the current fiscal year (see Appendix B.)	June 15, 1880	21	220	1	.....	25,000 00	75,000 00
	To pay amounts found due by the accounting officers of the Treasury on account of punishment for violation of internal revenue laws, as follows:							
	For the fiscal year 1880	June 19, 1878 June 21, 1879	20 21	187 23	1 1	.....	2,750 75	75,000 00
	For the fiscal year 1879	June 19, 1878 Mar. 3, 1879	20 20	187 413	1 1	.....	81 50	100,000 00
	NOTE.—See letters of the Commissioner of Internal Revenue in explanation of the foregoing estimates in appendix marked B.							

Estimates of appropriations required by the various departments, &c.—Continued.

General object. (Title of appropriation.)	Detailed objects of expenditure, and explanations.	Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large, or to Revised Statutes. Vol. or R. S.	Page.	Sec.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the fiscal year for which the appropriation is required.
	TREASURY DEPARTMENT—Continued.							
	LIFE-SAVING SERVICE.							
Life-saving service, contingent expenses.	For fuel for life-saving and life-boat stations, and houses of refuge; repairs and outfits for the same; supplies and provisions for houses of refuge and for shipwrecked persons succored at stations; traveling expenses of officers under orders from the Treasury Department, and contingent expenses, including freight, storage, repairs to apparatus, medals, labor, stationery, advertising, and miscellaneous expenses that cannot be included under any other head of life-saving stations on the coasts of the United States, being a deficiency for the fiscal year 1881.	June 16, 1880	21	261	1	.....	$15,000 00	$65,000 00
	NOTE.—This additional amount is required mainly on account of the unlooked for expense resulting from the burning of the station-house, apparatus, and supplies at Pea Island, N. C., on the 29th day of May, 1880, and the destruction in a hurricane of the station-house, apparatus, and supplies at Brazos de Santiago, Tex., on the 11th and 12th of August, 1880.							
	MARINE HOSPITAL SERVICE.							
	To pay the Western Union Telegraph Company for telegrams on public quarantine service for the period from September, 1878, to July, 1879, inclusive; being a deficiency on account of the fiscal years 1879 and 1880.	Apr. 29, 1878	20	38	2, 4	.....	464 53	.....
	LIGHT-HOUSE ESTABLISHMENT.							
Commissions to superintendents of lights.	To pay amounts found due by the accounting officers of the Treasury to collectors of customs for commissions at two and one-half per centum on disbursements made by them in their capacity as superintendents of lights, during the fiscal year 1880.	Appropriated	20	380	1	.....	380 77	7,500 00
	MISCELLANEOUS.							
Contingent expenses, Treasury Department.	For rent of telephones, and incidental expenses connected therewith, for the transaction of business of the department, being a deficiency for the fiscal year 1881.	Submitted	.....	.....	.....	.....	250 00	.....

	For arranging and binding canceled marine papers, requisitions, and other important records; sealing ships' registers, newspapers, books, hand-stamps, and repairs of the same, being a deficiency for the fiscal year 1881.	June 15, 1880	21	220	1	.....	2,000 00	10,000 00
	For ice, buckets, file-holders, book-rests, labor, clocks, and repairs of the same, and for care of grounds, being a deficiency for the fiscal year 1881.	June 15, 1880	21	220	1	.....	2,000 00	7,500 00
Repairs and preservation of public buildings.	Repairs and preservation of public buildings under the control of the Treasury Department, being a deficiency for the fiscal year 1881.	June 16, 1880	21	260	1	.....	50,000 00	100,000 00
Vaults, safes, and locks for public buildings.	Vaults, safes, and locks, and repairs of same, for all public buildings under the control of the Treasury Department, being a deficiency for the fiscal year 1881.	June 16, 1880	21	265	1	.....	25,000 00	50,000 00
Heating apparatus for public buildings.	Heating, hoisting, and ventilating apparatus, and repairs of same, for all public buildings under the control of the Treasury Department, being a deficiency for the fiscal year 1881.	June 16, 1880	21	265	1	.....	25,000 00	75,000 00
Furniture and repairs of same for public buildings.	Furniture and repairs of furniture, and carpets for all public buildings under the control of the Treasury Department, being a deficiency for the fiscal year 1881. NOTE.—Necessary to provide furniture for new public building at Chicago.	June 16, 1880	21	265	1	.....	50,000 00	220,000 00
Fuel, lights, and water for public buildings.	Fuel, light, water, and miscellaneous items required by the janitors and firemen in the proper care of the buildings, furniture, and heating apparatus, such as brooms, mops, brushes, buckets, wheelbarrows, shovels, saws, hatchets, and hammers, for all public buildings under control of the Treasury Department, being a deficiency for the fiscal year 1881. NOTE.—For explanation of this estimate see Appendix C.	June 16, 1880	21	265	1	.....	125,000 00	425,000 00
Salaries and traveling expenses of agents at seal-fisheries in Alaska.	To pay B. F. Scribner and J. W. Beaman, late special agents at the seal-fisheries in Alaska, as follows:							
	B. F. Scribner, salary at the rate of $2,190 per annum for the months of July and August, 1880.	June 16, 1880	21	265	1	$368 96		
	Traveling expenses in returning to his home	....do	21	265	1	289 25		
	J. W. Beaman, salary at the rate of $2,190 per annum for the months of July and August, 1880.	....do	21	265	1	368 96		
	Traveling expenses in returning to his home.....	....do	21	265	1	185 24		
							1,212 41	7,770 00
	NOTE.—The act of June 16, 1880, making appropriation for salaries and traveling expenses of agents at seal-fisheries in Alaska, made no provision for the salaries of two agents at $2,190 per annum. The commissions of Messrs Scribner and Beaman having expired, therefore, on the 30th of June last, and as they were at the Islands of Saint Paul and Saint George in the Pacific Ocean, and discontinued their services under this appropriation as soon as							

Estimates of appropriations required by the various departments, &c.—Continued.

General object. (Title of appropriation.)	Detailed objects of expenditure, and explanations.	Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large, or to Revised Statutes. Vol. or R. S.	Page.	Sec.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the fiscal year for which the appropriation is required.
	TREASURY DEPARTMENT—Continued. MISCELLANEOUS—Continued. notified that no provision had been made for their salaries for the fiscal year 1881, and as it required a portion of the time specified in this estimate for the notifications to reach them and the remainder for their return home, it is deemed but fair that they should be paid their salaries for those months. The items for traveling expenses are based upon the report of the Commissioner of Customs as to the amount to be allowed in each case.							
Repayment to importers excess of deposits for unascertained duties.	For repayment to importers the excess of deposits for unascertained duties, or duties or other moneys paid under protest, including interest and costs in judgment cases, $350,000, which sum is hereby made available for the payment of all claims to which the appropriation is applicable which are not payable from the permanent annual appropriation provided for in section 3689 Revised Statutes: *Provided*, That no portion of this appropriation shall be expended for the payment of claims known as "charges and commissions cases."	June 16, 1880	21	242	1	.....	$350,000 00	$300,000 00
Refund to E. E. Saunders..	To refund to E. E. Saunders, master of schooner Eddie Huck, the sum of $40, being a part of the penalty exacted under section 2, act March 3, 1875 (18 Stat., 485), for not having a seaman's time-book on his vessel, and covered into the Treasury, but subsequently remitted by the Secretary of the Treasury under section 5293 Revised Statutes.	Submitted	.....	.....	.....	.....	40 00	.....
National Museum relieving sewer.	Additional amount required for running the relieving sewer of the National Museum building into the North B street sewer, instead of into the Seventh street sewer, $900. NOTE.—The South B street sewer being entirely insufficient for the drainage of the new National Museum building and involving serious injury to the foundations and to the floors, an appropriation of $1,000 was made at the last session of Congress for making a connection with the sewer of Seventh street. A careful investi-	June 16, 1880	21	272	1	.....	900 00	1,000 00

	gation, during last summer's rains, showed this equally inadequate to the test, and the appropriation was not expended. The alternative is to make a sewer-connection direct to North B street, and as the distance to be traversed is nearly twice as great as that originally estimated for, the additional amount of $900 is required. (By Prof. Spencer F. Baird.)							
Preservation of collections, Smithsonian Institution.	For expense of transfer to and arrangement in the new National Museum building of the collections of the United States surveying and exploring expeditions and of the specimens presented to the United States at the International Exhibition of 1876, $10,000, being for the service of the current fiscal year.	June 16, 1880	21	276	1	.....	10,000 00	45,000 00
Steam-vessel, food-fishes ...	For expenses of lengthening the steamer Fish Hawk for the purpose of increasing her fish-hatching capacity and for providing additional fish-hatching apparatus, $12,709, which shall be available until used.	March 3, 1879 May 31, 1880	20 21	383 151	1 1	.....	12,709 00	.....
		Submitted	.....	.....	.....	.....	321 00	.....
	To enable the Secretary of the Treasury to pay for expenses incurred in his selection of a distinctive paper for the securities of the United States; such distinctive paper being required to be adopted by the Secretary of the Treasury under the provisions of section 5430 of the Revised Statutes, $321.							
	To enable the Secretary of the Treasury to pay a commission not to exceed three-eighths of one per centum for disbursing the appropriations made for the construction of a fire-proof building for the National Museum, $1,081.87.	.... March 3, 1875	R. S. R. S. 18	42 719 415	255 3657, 3658 4	.....	1,081 87	.....
	NOTE.—The disbursements referred to were made under an appointment from the Secretary of the Treasury, but a doubt having arisen as to whether a commission can be allowed on payments made for this class of public buildings, the question is submitted for the determination of Congress.							
	To enable the Secretary of the Treasury to pay for services rendered in connection with the duties of the late chairman of the committee on experiments and chairman of the Light-House Board in conducting scientific researches for the Light-House Establishment, as recommended by the Light-House Board, $2,925.	Submitted	.....	.....	.....	.....	2,925 00	.....
	To enable the Secretary of the Treasury to pay out of the appropriation for "collecting mining statistics" for the fiscal year 1881, a sum not exceeding $300 for extra clerical services rendered in the office of the Director of the Mint in connection therewith.							
	NOTE.—Attention is called to the estimate submitted to Congress at its last session for "reimbursement of W. and J. Beattie, jr., for work done in excess of the appropriations for Providence River beacons and Cedar Island light-station, New York, $2,603.67," for which no appropriation was made. (See House Ex. Doc. No. 24, 46th Cong., 2d sess., p. 10.)							
	Total Treasury Department	.....	.....	.....	.....	.....	1,790,925 50	9,274,981 90

Estimates of appropriations required by the various departments, &c.—Continued.

General object. (Title of appropriation.)	Detailed objects of expenditure, and explanations.	Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large, or to Revised Statutes. Vol. or R. S.	Page.	Sec.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the fiscal year for which the appropriation is required.
	WAR DEPARTMENT.							
	OFFICE OF THE QUARTERMASTER-GENERAL.							
Salaries, office of the Quartermaster-General.	For compensation of ten additional clerks, to be employed in the office of the Quartermaster-General, to facilitate the settlement of claims under the act of July 4, 1864, at $1,000 each per annum; to be immediately available for the fiscal years 1881 and 1882. NOTE.—The great number of claims under the act of July 4, 1864, filed in this office in the last weeks of 1879 under the statute of limitation which began to run on January 1, 1880, the fact that the claimants and the witnesses in these cases are dying, the claims having all originated over 15 years since, make it important to hasten the investigation before evidence on the part of the United States perishes entirely. Only evidence against the United States is filed by claimants. Therefore as great a force of investigating agents and clerks as the regular appropriation could possibly pay has been put upon this work, and this estimate is to provide for a still further increase and early closing of these accounts. For details reference is made to annual report of the Quartermaster-General of 1880, and to special report to the Secretary of War December 1, 1880. (See Appendix marked D.)	June 15, 1880	21	227	1	.....	$10,000 00	$152,240 00
Contingent expenses, office of the Quartermaster-General.	Stationery, office furniture, repairs and miscellaneous items, being a deficiency for the current fiscal year.	Appropriated.	21	227	1	.....	1,500 00	8,000 00
	MISCELLANEOUS.							
Contingent expenses, office of Adjutant-General (old Navy Department building).	Fuel, light, heating apparatus, matting, cleaning, labor, and incidental items of care of two floors of the old Navy Department building occupied by Adjutant-General's Office; being a deficiency for the current fiscal year. NOTE.—The amount, $2,000, appropriated by the act of June 15, 1880 (21 Statutes, page 227), for "contingent expenses of the Adjutant-General's Office, in the old Navy Department building, and	Appropriated.	21	227	1	.....	500 00	

	in the building on F street above Seventeenth street," for fiscal year 1881, is insufficient to meet the actual requirements of the office of the Adjutant-General in the old Navy Department building alone. $2,500 was appropriated for contingent expenses, office of Adjutant-General in old Navy Department building, for the fiscal year ending June 30, 1880, viz: $2,000 by the act of June 21, 1879 (21 Statutes, page 28), and $500 by the act of June 16, 1880 (21 Statutes, page 245).							2,000 00
Contingent expenses, office of Adjutant-General in building No. 1725 F street above Seventeenth street.	Fuel and gas, ice, carpets and oil-cloth, plumbing, repairs, &c., for the office of the Adjutant-General in the building (owned by the United States) No. 1725 F street, above Seventeenth street, and for iron shutters to secure against fire from adjacent buildings; being a deficiency for the current fiscal year. NOTE.—This building is occupied for office purposes by the colored troops division of the Adjutant-General's Office, and contains the records of the volunteer colored troops, which are subject to constant reference. The amount, $2,000, appropriated by the act of June 15, 1880, for contingent expenses office of Adjutant-General in old Navy Department building and in building on F street above Seventeenth street, for the present fiscal year, is insufficient to meet the requirements of the office in the old Navy Department building alone, and the sum asked, $800, should be granted for the building No. 1725 F street.	Same act					800 00	
	MILITARY ESTABLISHMENT.							
	Office of Paymaster-General.							
Mileage	For mileage of officers of the Army for travel on duty under orders, being a deficiency for the current fiscal year. NOTE.—This deficiency is estimated upon the basis of the actual disbursements under that head during the four months ending October 31, 1880. It is due largely to the increased travel incident upon courts of inquiry and courts-martial. It is proper to say in this connection that it is highly probable, had not the appropriation for this department been divided into separate heads, the total amount appropriated would be sufficient to meet its wants. The amounts required for the use of this department, with few exceptions, are fixed by positive law, independent of the appropriation act; if, therefore, economy in expenditures is the object sought by such specific legislation, it should be directed rather to the basis of the expenditure than to its manner. (Extract from Paymaster-General's letter of December 16, 1880.)	July 24, 1876 Appropriated.	19 21	100 110	2 1		75, 000 00	200, 000 00

Estimates of appropriations required by the various departments, &c.—Continued.

General object. (Title of appropriation.)	Detailed objects of expenditure, and explanations.	Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large, or to Revised Statutes. Vol. or R. S.	Page.	Sec.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the fiscal year for which the appropriation is required.
	WAR DEPARTMENT—Continued.							
	Office of Paymaster-General—Continued.							
Collection and payment of bounty, prize-money, and other claims of colored soldiers and sailors.	To enable the Paymaster-General to meet the necessary expenses in connection with the payment of claims of colored soldiers and sailors for pay, bounty, prize-money, &c., as authorized by section 2 of the act of March 3, 1879, the amount to be available without regard to any fiscal year.	March 3, 1879	20	402	2	.....	$5,595 02	.....
	NOTE.—For explanation of this estimate see appendix marked E.							
	Military Academy.							
Pay of the Military Academy.	For the pay of seventy cadets for the period from May 1, 1876, to June 13, 1876, both dates inclusive, being one month and thirteen days, at $50.79 per month, the rate then authorized by law.	Submitted .... March 3, 1875	 18	 467	 1	$5,096 00		
	For the pay of one cadet for the period from May 1, 1876, to June 24, 1876 (under age until that date), both dates inclusive, being one month and twenty-four days, at $50.79 per month.	....do	.....	.....	.....	91 42		
						———	5,187 42	$235,000 00
	NOTE.—Of the amount appropriated, $11,807.11 was covered into the surplus fund as an unexpended balance. (For explanation of this estimate see appendix marked F.)							
	For pay of the Military Academy band for the fiscal year 1880....	March 3, 1877 Jan. 20, 1879	19 20	383 260	2, 3 1	.....	260 04	207,292 33
	NOTE.—The amount appropriated for pay of the Military Academy band for the fiscal year 1880 was $8,999. This appropriation was made on an estimate submitted in October, 1878, and it would have been sufficient for the purposes had it not been for the unexpected number of men discharged for disability before the expiration of their term, carrying with them large amounts due for clothing not drawn, and for travel pay payable only on their discharge. This is a contingency that cannot, by an estimate made so far in advance, be accurately provided against. The claims of these dis-							

charged men, being just and legal, must be paid so long as there is money to the credit of the appropriation, even though, as in this instance, they should not leave sufficient funds to meet the legal dues to those who remain in service. As the balance to the credit of the appropriation "Pay of the Military Academy, 1880," is more than sufficient to meet the deficiency in the item herewith presented, it is suggested that authority be granted to use so much of the unexpended balance as may be necessary to pay the above claim. (Paymaster-General, U. S. A.)

Quartermaster's Department.

Incidental expenses.....	For postage and telegrams or dispatches; extra pay to soldiers employed under the direction of the Quartermaster's Department in the erection of barracks, quarters, storehouses, and hospitals, in the construction of roads, and other constant labor, for periods of not less than ten days, including those employed as clerks at division and department headquarters, and signal-service sergeants; expenses of expresses to and from the frontier posts and armies in the field; of escorts to paymasters and other disbursing officers, and to trains where military escorts cannot be furnished; expenses of the interment of officers killed in action, or who die when on duty in the field, or at posts on the frontiers, or when traveling on orders, and of non-commissioned officers and soldiers; authorized office furniture; hire of laborers in the Quartermaster's Department, including the hire of interpreters, spies, and guides for the Army; compensation of clerks to officers of the Quartermaster's Department; compensation of forage and wagon masters, authorized by act of July 5, 1838; for the apprehension, securing, and delivering of deserters, and the expenses incident to their pursuit; and for the following expenditures, required for the several regiments of cavalry, the batteries of light artillery, and such companies of infantry and scouts as may be mounted, and for the trains, to wit: hire of veterinary surgeons, medicine for horses and mules, picket-ropes, and for shoeing horses and mules; also, generally, the proper and authorized expenses for the movement and operations of the Army not expressly assigned to any other department; being a deficiency for the current fiscal year.	.....	R. S.	207	1137	.....	55,260 00	1,000,000 00
		.....	R. S.	223	1287			
		Revised Army Reg's, 1863, p. 159, par. 1065.						
		July 5, 1838	5	257	10			
		Appropriated	21	111	1			

NOTE.—$15,260 of this estimate is required to supply a deficiency in horse and mule shoes and horseshoe nails, and for necessary office and barracks furniture and other miscellaneous articles for independent posts, arsenals, and depots. $40,000 of it is required for continuing the increased force of agents for investigation and settlement of claims. See letters of Quartermaster-General to Hon. Secretary of War, dated December 1 and 17, 1880 (appendix marked D).

Estimates of appropriations required by the various departments, &c.—Continued.

General object. (Title of appropriation.)	Detailed objects of expenditure, and explanations.	Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large, or to Revised Statutes.			Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the fiscal year for which the appropriation is required.
			Vol. or R. S.	Page.	Sec.			
	WAR DEPARTMENT—Continued.							
	Quartermaster's Department—Continued.							
Army transportation.....	Transportation of the Army, including baggage of the troops when moving either by land or water; of clothing, camp and garrison equipage from the depots of Philadelphia and Jeffersonville to the several posts and Army depots, and from those depots to the troops in the field; of horse equipments and of subsistence stores from the places of purchase and from the places of delivery, under contract, to such places as the circumstances of the service may require them to be sent; of ordnance, ordnance stores, and small arms from the founderies and armories to the arsenals, fortifications, frontier posts, and Army depots; freights, wharfage, tolls, and ferriages; the purchase and hire of horses, mules, oxen, and harness, and the purchase and repair of wagons, carts, and drays, and of ships and other sea-going vessels, and boats required for the transportation of supplies, and for garrison purposes; for drayage and cartage at the several posts; hire of teamsters; transportation of funds forthe Pay and other disbursing departments; the expense of sailing public transports on the various rivers, the Gulf of Mexico, and the Atlantic and Pacific; for procuring water at such posts as from their situation require it to be brought from a distance; and for clearing roads and for removing obstructions from roads, harbors, and rivers, to the extent which may be required for the actual operations of troops in the field; being a deficiency for the fiscal year 1880.	.... Revised Army Regulations, 1863, p. 159, par. 1064, and p. 163, par. 1096. Appropriated	R. S. R. S. '20	36 206 148	220 1133 to 1135 1	.....	$250,000 00	$4,200,000 00

NOTE.—This deficiency arises principally in the Division of the Missouri, which reports an indebtedness, to pay which there are no funds, amounting in that division alone to $180,000. Four regiments of infantry exchanged Northern and Southern stations in that division during the year at a cost of $92,000. The pursuit of the band of Victoria was active and long continued in a desert and difficult country, and involved heavy expenditures for transportation and supplies, and heavy losses in animals and means of transportation. Bills are also received, from time to time, from the

	Division of the Pacific, for settlement through the Treasury, where the appropriation is exhausted. The indebtedness in the Division of the Missouri is reported as follows: At Saint Paul ..... $30,000 At Saint Louis ..... 15,000 At Chicago ..... 8,300 Department of the Missouri ..... 127,000 Total 180,300							
	To pay land-grant railroads 50 per cent. of what the Quartermaster's Department finds justly due them for transportation during the fiscal year ending June 30, 1880, and prior years.	Appropriated.	20	390	1	.....	275,000 00	*300,000 00
	To pay land-grant railroads 50 per cent. of what the Quartermaster's Department finds justly due them for transportation during the fiscal year ending June 30, 1881. NOTE.—This estimate is submitted for the reason that the government is running into debt to these railroads, which in the meantime have been and are faithfully performing important service for the War Department in the transportation of troops and supplies.	....do	20	390	1	.....	125,000 00	
	Office of the Surgeon-General.							
Artificial limbs	For furnishing artificial limbs and appliances, or commutation therefor, and transportation; being a deficiency for the current fiscal year. NOTE.—By the Revised Statutes, sections 4787 to 4791, and the act approved August 15, 1876, artificial limbs are required to be furnished once every five years. The number whose right to limbs has been ascertained is 14,300, the greater part of whom apply during the first year of each period, thus necessitating a large appropriation for that year. An estimate was laid before Congress at its last session (see Book of Estimates, page 169,) asking for $350,000 for the service of the year ending June 30, 1881. Experience has now shown that that amount would have been insufficient, but that it would not have been exhausted until some time after the meeting of Congress. The amount appropriated was $250,000. (Statutes 21, page 270.) Orders have now been issued for 3,907 limbs, in kind or by commutation, at a net cost of $240,675, and it is believed that the balance will be required for the transportation authorized by law and incidental expenses. There are now 973 applications on file and awaiting action, requiring the sum of $60,812, and others are received every day. (Surgeon-General's letter dated November 23, 1880.)	Aug. 15, 1876 .. Appropriated.	19 21	203 270	1, 2 1	.....	250,000 00	250,000 00

*An appropriation of $300,000 was made by act of March 3, 1879 (20 Stat., p. 390), for the payment of arrears of Army transportation to certain land-grant railroads.

Estimates of appropriations required by the various departments, &c.—Continued.

General object. (Title of appropriation.)	Detailed objects of expenditure, and explanations.	Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large, or to Revised Statutes. Vol. or R. S.	Page.	Sec.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the fiscal year for which the appropriation is required.
	WAR DEPARTMENT—Continued.							
	Arsenals.							
Benicia Arsenal, Benicia, Cal.	For rebuilding the carpenter's and blacksmith's shops destroyed by fire on November 3, 1880.	Submitted	.....	.....	.....	$40,000 00		
		Appropriated .	21	267	1	22,000 00		
	Replacing steam-engine, shafting, pulleys, hangers, machines, and tools destroyed by fire on November 3, 1880.	....do	.....	.....	.....		$62,000 00	$10,000 00
	For the service of the current fiscal year.							
	NOTE.—These shops, with their machinery, tools, &c., were destroyed by fire on the morning of November 3, 1880.							
Allegheny Arsenal, Pittsburgh, Pa.	Grading, curbing, and paving, with Miller's wood pavement, Penn avenue, on arsenal front, between Thirty-ninth and Fortieth streets.	Submitted	.....	.....	.....	5,821 20		
	Interest on $5,821.20, at 7 per cent., from October 1, 1871, to March 3, 1881, nine years five months and three days.	....do	.....	.....	.....	3,840 48		
	Grading, curbing, and paving, with cobble-stones, Thirty-ninth street, on arsenal boundary, between Butler street and Penn avenue.	....do	.....	.....	.....	5,168 00		
	Grading, curbing, and paving, with cobble-stones, to center of Main street, a strip of United States land 9 feet wide, connecting Allegheny Arsenal and spring.	....do	.....	.....	.....	22 71		
	Interest on $22.71 at 7 per cent., from October 1, 1871, to March 3, 1881, nine years five months and three days.	....do	.....	.....	.....	14 97		
	For the service of the current fiscal year.						14,867 36	.....
	NOTE.—These items are for work done on the streets by the city of Pittsburgh without consultation with or authority from the United States Government, and the improvements were made with money raised on city bonds bearing 7 per cent. interest and running ten years, payable, principal and interest to date of payment, at any time.							

Indianapolis Arsenal, Indianapolis, Ind.	Grading, curbing, and bowldering 1,176.7 feet of the sidewalk on Clifford avenue, along the line of the arsenal grounds, for the service of the current fiscal year. NOTE.—This work was done in 1876 by the city authorities of Indianapolis, in accordance with a law passed by the city councils providing for the grading, &c., of Clifford avenue, approved June 12, 1876.	Submitted					1,118 43	
Testing machine	To pay to Albert H. Emery, of the city and State of New York, in full settlement of all claims, legal or equitable, which he has in any way against the United States on account of the cost of the testing machine built and erected by him for the United States, including the time spent by him in designing and constructing the said machine, together with the use of all patents and inventions used therein: *Provided*, That said machine, together with the full right to the use therein of all patents and inventions used in its design and construction, shall belong to the United States. NOTE.—The Chief of Ordnance "reports the successful operation of the United States testing machine at the Watertown Arsenal, adding that this machine is considered the most perfect testing machine in the world; equally able to test a single hair and the largest column or specimens by either tension or compression with any load desired, from one to eight hundred thousand pounds, being of any length from one inch to thirty feet. Its determinations are of great value to the departments of the government and to the scientific and industrial interests of the whole country. The memorial of its inventor, asking additional compensation and reimbursement, is commended to the favorable consideration of Congress."—(*Extract from Report of Secretary of War Nov.* 19, 1880, *page* 22.) Attention is also invited to the message of the President of the United States, dated April 16, 1880 (House Ex. Doc. No. 74, 46th Cong., 2d sess.), recommending favorable action in this case, and the report (No. 1584) of the Committee on Claims of the House of Representatives, dated June 3, 1880, to accompany bill H. R. 6373, 46th Cong., 2d sess.	Appropriated	21 21	113 269	1 1		200,000 00	15,000 00
	Miscellaneous.							
Buildings for military headquarters at San Antonio, Tex.	For the completion of necessary buildings, including officers' quarters, for the headquarters already commenced of the military department of Texas, on the military reservation at San Antonio, Tex. NOTE.—The sundry civil appropriation act of June 16, 1880, limited the cost of the headquarters buildings at San Antonio to $125,000, and appropriated $75,000. This estimate is to complete the buildings.	June 16, 1880	21	269	1		50,000 00	75,000 00

Estimates of appropriations required by the various departments, &c.—Continued.

General object. (Title of appropriation.)	Detailed objects of expenditure, and explanations.	Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large, or to Revised Statutes. Vol. or R. S.	Page.	Sec.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the fiscal year for which the appropriation is required.
	WAR DEPARTMENT—Continued. *Miscellaneous*—Continued.							
Pay of two and three year volunteers, 1871 and prior years.	For payment of amounts for arrears of pay to two and three year volunteers who served in the war of the rebellion, which have been certified to be due by the accounting officers of the Treasury Department since December 18, 1880, and which may be certified to be due by said officers up to June 30, 1882. (See Appendix G.)	Submitted					$85,000 00	
Bounty to volunteers, their widows and legal heirs—1871 and prior years.	For payment of amounts for bounty to volunteer soldiers who served in the war of the rebellion, their widows and legal heirs, which have been certified to be due by the accounting officers of the Treasury Department since December 18, 1880, and which may be certified to be due by said officers up to June 30, 1882. (See Appendix G.)	do					200,000 00	
Pay, &c., of the Army—1878 and prior years.	For payment of amounts for pay to discharged soldiers of the United States Army, which have been certified to be due by the accounting officers of the Treasury Department since December 18, 1880, and which may be certified to be due by said officers up to June 30, 1882. (See Appendix G.)	do					15,000 00	
	NOTE.—An explanation of the foregoing three estimates will be found in the appendix marked G.							
	Total War Department						1,682,088 27	$6,654,532 33
	NAVY DEPARTMENT.							
Contingent expenses, Navy Department building.	To pay F. H. Stickney, disbursing clerk, Navy Department, for contingent expenses, Navy Department building, paid for by him for the fiscal year 1880.	Appropriated	20 21 21	198 23, 28 245	1 1, 2 1		30 78	9,000 00

	NAVAL ESTABLISHMENT.								
Pay of the Navy	For payment of amounts found due by the accounting officers of the Treasury Department for pay of the Navy, being for the service of the fiscal year 1879.	May	4, 1878	20	48	1		75 62	7, 350, 000 00
Provisions, Navy, Bureau of Provisions and Clothing.	For payment of amounts found due by the accounting officers of the Treasury Department for provisions for the Navy, being for the service of the fiscal year 1879.	May	4, 1878	20	53	1		731 10	1, 175, 000 00
Contingent, Bureau of Provisions and Clothing.	For payment of amounts found due by the accounting officers of Treasury Department for contingent expenses of the Bureau of Provisions and Clothing, being for the service of the fiscal year 1879.	May	4, 1878	20	53	1		1, 314 19	35, 000 00
Pay, Marine Corps	For payment of amounts found due by the accounting officers of the Treasury Department for pay of the Marine Corps, as follows:								
	For the service of the fiscal year 1880	Feb.	14, 1879	20	290	1		83	648, 397 00
	For the service of the fiscal year 1879	May	4, 1878	20	55	1		12 84	614, 815 00
Contingent, Marine Corps	For payment of amounts found due by the accounting officers of the Treasury Department for contingent expenses of the Marine Corps, being for the service of the fiscal year 1879.	May	4, 1878	20	56	1		691 10	20, 000 00
Observation, solar eclipse	For payment of amounts found due by the accounting officers of the Treasury Department for observation of the solar eclipse of July, 1878.	April	30, 1878	20	45	1		1, 206 68	8, 000 00
	Total Navy Department							4, 063 14	9, 860, 212 00
	INTERIOR DEPARTMENT.								
Salaries, office of Auditor of Railroad Accounts.	To pay difference between amount of salary per annum for the Auditor of Railroad Accounts, fixed by law at $5,000, and amount appropriated for the fiscal year ended June 30, 1880, $3,600.	June June	19, 1878 21, 1879	20 21	169 170 29	2 2		1, 400 00	3, 600 00
	To pay salary—deficiency accruing in the same manner, for the fiscal year ending June 30, 1881.	June June	19, 1878 15, 1880	20 21	169 170 233	2 1		1, 400 00	3, 600 00
Contingent expenses, General Land Office.	To pay amounts found due by the accounting officers of the Treasury Department for contingent expenses of the General Land Office, being a deficiency for the fiscal year 1880.	June	21, 1879	21	23	1		57 00	25, 000 00
Reproducing plats of surveys, General Land Office.	For reproducing worn and defaced township plats for the use of the general and local land offices, being a deficiency for the current fiscal year. NOTE.—The foregoing estimate is submitted to enable this office to continue the reproduction of worn out and defaced plats of surveys on file in this and the local offices, rendered so by constant handling and use.	June	16, 1880	21	273	1		15, 000 00	10, 000 00

Estimates of appropriations required by the various departments, &c.—Continued.

General object. (Title of appropriation.)	Detailed objects of expenditure, and explanations.	Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large, or to Revised Statutes. Vol. or R. S.	Page.	Sec.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the fiscal year for which the appropriation is required.
	INTERIOR DEPARTMENT—Continued.							
Reconstructing Interior Department building.	Overhauling and putting in best condition the skylights glazed during last winter.	June 16, 1880	21	272	1	$400 00		
	Furnishing and putting on hardware to windows	do				200 00		
	Baywood hand-rails, mostly circular, of gallery and railings	do				800 00		
	Plain and ornamental painting and marbleizing the west wing	do				1,250 00		
	Iron sills to form tight joints on top of slate slabs of both galleries all around center naves, and miscellaneous finishing.	do				2,290 00		
	Additional coat of paint for roofs	do				300 00		
	India-rubber plates on steps of sixteen stories of gallery and stairs	do				500 00		
	Covering the leaky floors of the northern porticos (on level of main story) with asphalt, being on account of the service of the fiscal year 1881.	do				175 00	$5,915 00	$80,000 00
Buildings and Grounds, Government Hospital for the Insane.	General repairs and improvements, being the difference between the appropriation and the estimate for the fiscal year 1881. NOTE.—For explanation of this estimate see Appendix marked H.	June 16, 1880	21	275	1		5,000 00	5,000 00
Current expenses, Government Hospital for the Insane.	Support, clothing, and treatment in the Government Hospital for the Insane of the insane of the Army and Navy, Marine Corps, and Revenue-cutter Service, and of all persons who have become insane since their entry into the military or naval service of the United States and who are indigent, and of the indigent insane of the District of Columbia, being the difference between the appropriation and the estimate for the fiscal year 1881. NOTE.—For explanation of this estimate see Appendix marked H.	June 16, 1880	21	275	1		32,000 00	143,000 00
	PUBLIC LANDS SERVICE.							
Surveying the public lands.	For payment of amounts found due by the accounting officers of the Treasury Department on account of surveying the public lands, being a deficiency for the fiscal year 1880.	Mar. 3, 1879	20	392	1		4,099 51	300,000 00

	NOTE.—The foregoing deficiency in the surveying service was caused by the work performed by the several deputy surveyors having been underestimated by the respective surveyors-general, thus causing a deficiency in the apportionment to the respective surveying districts, and, the entire appropriation having already been contracted for, a consequent deficiency in the general appropriation.							
Surveying public and private lands.	For payment of amounts found due by the accounting officers of the Treasury Department on account of surveying public and private lands, being a deficiency for the fiscal year 1879.	June 20, 1878 June 16, 1880	20 21	229 247	1 1	.....	1,120 29	308,881 38
Salaries and commissions of registers and receivers.	For salaries and commissions of registers of land offices and receivers of public moneys, being a deficiency for the current fiscal year.	June 16, 1880	21	273	1	.....	55,400 00	386,000 00
	NOTE.—For explanation of this estimate see Appendix marked I.							
	For payment of amounts found due by the accounting officers of the Treasury Department on account of salaries and commissions of registers and receivers, being a deficiency for the fiscal year 1879.	June 20, 1878	20	229	1	.....	9,582 23	380,000 00
Investigating the habits of insects injurious to the cotton plant and agriculture.	For payment of amounts found due by the accounting officers of the Treasury Department on account of expenses of investigating the habits of insects injurious to the cotton plant and agriculture, being a deficiency for the fiscal year 1880.	June 21, 1879	21	29	2	.....	1 14	5,000 00
Protection and improvement of Yellowstone National Park.	For payment of amounts found due by the accounting officers of the Treasury Department on account of protection and improvement of Yellowstone National Park, being a deficiency for the fiscal year 1880.	Mar. 3, 1879	20	393	1	.....	89 76	10,000 00
Commission to report upon depredations of Rocky Mountain locusts.	For payment of amounts found due by the accounting officers of the Treasury Department on account of expenses of commission to report upon depredations of Rocky Mountain locusts, being a deficiency for the fiscal year 1879.	June 20, 1878 June 16, 1880	20 21	240 246	1 1	.....	2 80	10,600 00
Contingent expenses office of surveyor-general of Nebraska and Iowa.	For payment of amounts found due by the accounting officers of the Treasury Department on account of contingent expenses of office of the surveyor-general of Nebraska and Iowa, being a deficiency for the fiscal year 1879.	June 20, 1878	20	228	1	.....	22 95	1,500 00
Contingent expenses of land offices.	For payment of amounts found due by the accounting officers of the Treasury Department on account of contingent expenses of land offices, being a deficiency for the fiscal year 1880.	Mar. 3, 1879	20	392	1	.....	212 98	100,000 00
	Total Interior Department.....	.....	.....	.....	.....	.....	131,303 66	1,772,181 38

Estimates of appropriations required by the various departments, &c.—Continued.

General object. (Title of appropriation.)	Detailed objects of expenditure, and explanations.		Date of acts, resolutions, or treaties authorizing or providing for the expenditures.	References to Statutes at Large, or to Revised Statutes. Vol. or R. S.	Page.	Sec.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the fiscal year for which the appropriation is required.
	POST-OFFICE DEPARTMENT.								
	Deficiency in the amount appropriated from the revenues of the postal service for compensation of postmasters for the fiscal year 1880, as per accounts audited by the Sixth Auditor, payable out of the revenues of the Post-Office Department	$158,407 54	July 12, 1876 ..	19	81	7	.....	.....	.....
			June 17, 1878 ..	20	141	1	.....	.....	.....
			March 3, 1879..	20	361	1, 26	.....	.....	.....
	NOTE.—The amount appropriated from the revenues of the Post-Office Department for compensation of postmasters for the service of the fiscal year 1880 was $7,550,000.								
	Refund to Cecilia L. Faussett, being an allowance of the Postmaster-General of a moiety of a penalty of $150, imposed on Eli Wright for violation of the postal laws, case No. 26, May term, 1879, district court of the United States for the western district of Pennsylvania, payable out of the revenues of the Post-Office Department	75 00							
	NOTE.—The whole amount of penalty was deposited by the clerk of the court June 15, 1880, at the Tradesmen's National Bank, of Pittsburgh, Pa., and covered into the Treasury for the use of the Post-Office Department.								
	Total Post-Office Department	158,482 54							
	DEPARTMENT OF JUSTICE.								
	JUDICIAL.								
Fees of jurors, United States courts.	To pay accounts for fees of jurors, United States courts, being a deficiency for the current fiscal year.		June 16, 1880..	21	278	1	....	$40,000 00	$400,000 00

Fees of witnesses, United States courts.	To pay accounts for fees of witnesses, United States courts, being a deficiency for the current fiscal year.	....do	21	278	1	.....	50,000 00	550,000 00
Support of prisoners, United States courts.	To pay accounts for support of prisoners, United States courts, being a deficiency for the current fiscal year.	....do	21	278	1	.....	125,000 00	200,000 00
Fees of clerks, United States courts.	To pay accounts for fees of clerks, United States courts, as follows:							
	For the fiscal year 1881	....do	21	278	1	.....	40,000 00	160,000 00
	For the fiscal year 1880	June 30, 1879..	21	43	1	.....	20,000 00	160,000 00
	NOTE.—Of the above amount asked for the fiscal year 1880, $17,087.47 has been found due by the accounting officers of the Treasury, and the Attorney-General estimates that the balance will be required to pay accounts still to be presented.							
Fees of district attorneys, United States courts.	To pay accounts for fees of district attorneys, United States courts, being a deficiency for the fiscal year 1880.	....do	21	43	1	.....	25,000 00	300,000 00
	NOTE.—Of the above amount, $18,779.79 has been found due by the accounting officers of the Treasury, and the Attorney-General estimates that the balance will be required to pay accounts still to be presented.							
Expenses of Territorial courts in Utah.	To pay amounts found due by the accounting officers of the Treasury on account of expenses of Territorial courts in Utah, being a deficiency for the fiscal year 1879.	June 20, 1878..	20	234	1	.....	1,623 73	26,000 00
		March 3, 1879..	20	415	1			
	Total Department of Justice, judicial	.....	.....	.....	.....	.....	301,623 73	1,796,000 00
	RECAPITULATION.							
	Legislative	.....	.....	.....	.....	.....	215 96	6,000 00
	Executive proper	.....	.....	.....	.....	.....	2,458 89	39,464 00
	State Department	.....	.....	.....	.....	.....	31,927 33	255,129 80
	Treasury Department	.....	.....	.....	.....	.....	1,790,925 50	9,274,981 90
	War Department	.....	.....	.....	.....	.....	1,682,088 27	6,654,532 33
	Navy Department	.....	.....	.....	.....	.....	4,063 14	9,860,212 00
	Interior Department	.....	.....	.....	.....	.....	131,303 66	1,772,181 38
	Department of Justice, judicial	.....	.....	.....	.....	.....	301,623 73	1,796,000 00
	Grand total	.....	.....	.....	.....	.....	3,944,606 48	29,658,501 41

APPENDIX.

APPENDIX A.

Relating to the estimate to pay the claim of C. S. Bundy (see page 5).

TREASURY DEPARTMENT,
FIRST COMPTROLLER'S OFFICE,
Washington, November 6, 1880.

SIR: I have the honor to acknowledge the receipt of your reference of the 27th ultimo of a bill presented to the Commissioners of the District of Columbia for services by Charles S. Bundy, as acting judge of the police court of the District of Columbia from August 31 to October 3, 1880, $340.

The question presented in the papers is whether the Revised Statutes of the District of Columbia make appropriation for the payment of the claim of Judge Bundy.

I have examined the subject carefully, and am very clearly of the opinion that there is no appropriation applicable to the payment of this claim. I am satisfied from representations made to me that the claim is just, and that the services of Judge Bundy were necessary. I respectfully recommend that the amount of this claim be included in the deficiency estimates for the District of Columbia to be submitted to Congress at its next session.

Very respectfully,

WILLIAM LAWRENCE,
Comptroller.

Hon. JOHN SHERMAN,
Secretary of the Treasury.

APPENDIX B.

Relating to estimates for deficiencies for the internal revenue service (see page 5).

TREASURY DEPARTMENT,
OFFICE OF INTERNAL REVENUE,
Washington, November 16, 1880.

SIR: Owing to the increased production of distilled spirits, and the large number of new distilleries registered and operated, the expense for salaries of storekeepers and fees and expenses of gaugers, during the fiscal year ended June 30, 1880, was greatly in excess of the sum appropriated. There are now on file in this office accounts for the above period, for which there is no appropriation available, as follows:

Salaries of storekeepers	$48,772 00
Fees and expenses of gaugers	74,491 95
There are also accounts for the same period pending adjustment in the office of the First Comptroller for express charges, telegraphing, rent of offices, attorneys' fees, and other miscellaneous expenses, amounting to	7,419 58
And it is known that there are other accounts for similar expenses that have not been filed, which will probably amount to	4,316 47
Total	135,000 00

I would, therefore, recommend that an additional appropriation of $135,000, for "salaries and expenses of subordinate officers of internal revenue for 1880," be asked for as soon as Congress assembles.

These items embrace the compensation of the entire force of gaugers for the month of June, and the storekeepers in several districts for the same period, altogether over one thousand officers, who should be paid without delay, and it is, therefore, desirable that the amount needed for this deficiency be made available at the earliest practicable moment.

Respectfully,

GREEN B. RAUM,
Commissioner.

Hon. JOHN SHERMAN,
Secretary of the Treasury.

TREASURY DEPARTMENT,
OFFICE OF INTERNAL REVENUE,
Washington, January 6, 1881.

SIR: I have the honor to transmit herewith an estimate for deficiencies required for the service of internal revenue for the present fiscal year, as follows:

Salaries and expenses of collectors	$50,000 00
Salaries and expenses of agents, &c	745,957 00
Dies, paper, and stamps	131,878 08
Punishment for violations of internal-revenue laws	25,000 00
Total	952,835 08

The unprecedented increase in the receipts from internal revenue taxes necessarily largely augmented the expenditures for the proper maintenance of the internal revenue service.

The receipts for the fiscal year ended June 30, 1879, were $113,449,621.38; for the fiscal year ended June 30, 1880, $123,981,916.10; for the first six months of the present fiscal year, $66,801,420.21, while the regular appropriations from year to year have not been increased in a like ratio.

The allowances already made for salaries and expenses of collectors, taken in connection with the items for express charges, telegraphing, &c., cover the entire amount of the appropriation for salaries and expenses of collectors.

The deficiency of $50,000 estimated for is required to aid in the enforcement of the laws, to meet a constant demand for increased facilities for the payment of taxes, and such extraordinary expenses in the conduct of the business of the government as necessarily arise from time to time.

The item of $745,957 for salaries and expenses of agents, surveyors, storekeepers, gaugers, &c., is required chiefly to pay the salaries of storekeepers and gaugers.

There has been a steady increase in the receipts from distilled spirits during the past three years, and necessarily a large increase in the expenses of collecting the revenues from that source. The receipts from distilled spirits for the first five months of the present and two previous fiscal years have been as follows:

First five months of fiscal year 1879	$21,311,023
First five months of fiscal year 1880	24,350,071
First five months of fiscal year 1881	27,436,019

In a number of the collection districts where illicit distilling has greatly abounded I have encouraged the establishment of legal distilleries.

In the illicit-distilling districts of North Carolina, South Carolina, Tennessee, Georgia, Alabama, and Arkansas, there were, in 1878, 153 registered grain distilleries. In 1880 the number of legal distilleries in the same districts had been increased to 426, and on the 1st of January of the present year there were 517 legal distilleries registered and in operation—an increase of 364 over the 1st of January, 1878.

It will be understood that where a distillery is established the law requires that a storekeeper shall be assigned thereto, so that this expenditure is not within the control of the Commissioner of Internal Revenue.

The percentage of costs in collecting taxes from the small distilleries established in these districts is of course greater than in other parts of the country, but, while this policy has resulted in an increase in the expenses, a very large increase in the collections from distilled spirits in those districts has been the gratifying result.

As an illustration of this increase, I will state that the receipts from distilled spirits in the fifth and sixth districts of North Carolina and the fifth district of Tennessee, for the fiscal years named, were as follows:

1877	$690,582
1878	735,821
1879	853,119
1880	1,163,948

The same districts show collections from the same source, for the first five months of the fiscal year 1880 and the first five months of the present fiscal year, as follows:

1880	$449,558 87
1881	580,333 55
An increase in five months of	130,774 68

The effect of the establishment of legal distilleries has been very beneficial in the matter of breaking up illicit distilleries as well as in an increase of revenue derived.

The expenditures for storekeepers, storekeepers and gaugers, and gaugers for the first five months of the last fiscal year were $632,070, and for the whole fiscal year $1,758,968.

The expenditures for the first five months of the present fiscal year were $798,082, which would give a proportionate expenditure for the fiscal year of	$2,220,957
And estimated expenses of revenue agents and miscellaneous expenses	225,000
Total	2,445,957
Amount of appropriation	1,700 000
Deficiencies	745,957

The item of $131,878.08 asked for as a deficiency in the appropriation for dies, paper, and stamps is made necessary by the extraordinary increase in the production of stamps called for by the demands of trade, which is shown by the following comparative statement of stamps issued during the first six months of the fiscal years 1880 and 1881:

Tobacco, snuff, and cigar stamps.

	Number.	Value.
First six months of fiscal year 1880	122,595,466	$20,586,798
First six months of fiscal year 1881	144,876,430	22,673,405
Increase	22,280,964	2,086,603

Beer stamps.

	Number.	Value.
First six months of fiscal year 1880	22,189,360	$6,548,505
First six months of fiscal year 1881	25,069,160	7,377,190
Increase	2,879,800	828,685

Spirit stamps.

First six months of fiscal year 1880	2,500,100	$31,360,960
First six months of fiscal year 1881	3,144,900	38,058,460
Increase	644,800	6,496,550

Special tax stamps.

Increase of 20,000 in first six months of present fiscal year over first six months of 1880.

Documentary and proprietary stamps.

	Number.	Value.
First six months of fiscal year 1880	307,377,693	$4,047,293
First six months of fiscal year 1881	315,319,671	4,178,242
Increase	7,941,978	130,949

Paper for stamps.

	Sheets.	Pounds.	Value.
First six months of fiscal year 1880	17,195,000	354,080	$35,128 85
First six months of fiscal year 1881	26,310,000	615,052	71,622 98
Increase	9,115,000	260,972	36,494 13

The expenses on account of dies, paper, and stamps, for the first six months of the present fiscal year, were as follows:

Accounts audited and paid	$165,100 98	
Bills approved and not yet paid	64,238 06	
Balance of bills for December (estimated)	17,700 00	
		$247,039 04
Expenditure at same rate for last half of fiscal year	247,039 04	
Less amount of expenses of committee taking stock of stamps and transferring from American Bank Note Company, New York, to Treasury Department	2,200 00	
		244,839 04
Estimated expense of printing special tax stamps		15,000 00
Total		506,878 08
Amount of appropriation		375,000 00
Deficiency		131,878 08

The deficiency item of $25,000 for detecting and bringing to punishment persons guilty of violating the internal revenue laws is made necessary by the increase of the service in every branch, and when appropriated will make this item of appropriation the same as was appropriated for this purpose last year.

The total expenses of collecting the internal revenue taxes for the present fiscal year, including the deficiency appropriations herein estimated for, will not be greater than three and eight-tenths per cent.

I have the honor to be, very respectfully, your obedient servant,

GREEN B. RAUM, *Commissioner.*

Hon. JOHN SHERMAN,
Secretary of the Treasury.

APPENDIX C.

Explanation of estimates for fuel, lights, and water, and for furniture for public buildings under control of the Treasury Department. (*See page* 7.)

Fuel, lights, and water.—Estimated deficiency under the appropriation fuel, lights, and water, &c., for the fiscal year ending June 30, 1881, calculated upon the basis of the actual expenditures for the first six months of the current fiscal year.

Expenditures for three new buildings unoccupied during the fiscal year ending June 30, 1880.

	Fuel.	Light.	Labor.	Miscellaneous.	Total.
Atlanta	$965 50	$1,000 00	$1,594 77	$1,821 00	$5,381 27
Chicago	20,672 50	18,000 00	28,335 01	5,500 00	72,507 51
San Francisco	3,318 00	1,000 00	6,901 97	2,395 00	13,614 97
Total	24,956 00	20,000 00	36,831 75	9,716 00	91,503 75

Increased expenditures for 103 *public buildings under the control of the Treasury Department other than those above named.*

Fuel	$16,717 96	
Light	36,323 65	
Labor	3,651 23	
Miscellaneous	2,360 00	
		$59,052 84
Increased expenditures for old buildings		$59,052 84
Expenditures for new buildings		91,503 75
Estimate for additional fuel		10,000 00
Total increase of 1881 over 1880		160,556 59
Amount appropriated for fiscal year ending June 30, 1880		395,000 00
Total expenditures for 1881		555,556 59
Amount appropriated for 1881		425,000 00
Estimated deficiency for 1881		130,556 59

The increased expenditure for gas is caused by the consumption in three new buildings not occupied during the fiscal year ending June 30, 1880, by the general increase in consumption throughout the several cities where post-offices are located in buildings owned by the government, and by the advance in price paid for gas in New York City, where the annual expenditure for lighting public buildings is more than double the amount paid for like service in any other city.

During the fiscal year ending June 30, 1880, owing to competition of gas-light companies in New York, the department was enabled to obtain exceptionally favorable terms, the price paid for gas being only $1.45 per M feet. At the close of the past fiscal year the New York Gas-Light Company notified the department that the price for gas would, after the expiration of the period covered by their contract, be advanced to $2.25 per M feet. Immediately upon receipt of this notice, proposals were invited from gas companies in New York, but no more favorable terms than those offered by the New York Gas-Light Company were received, and the department was accordingly compelled to accept the offer of the company who had the contract during the preceding year.

The increased expenditure for fuel is attributable to the general advance in price and to the supply purchased for new bnildings; and,

owing to the unusual severity of the winter, it is anticipated that not less than $10,000 additional will be required to supply extra fuel required by the increased consumption.

The increase for labor and miscellaneous items is accounted for by authorizations, principally for labor in the new buildings.

Furniture and repairs of same:

Estimated cost of furniture for United States courts, court offices, post-office, and offices of customs, internal revenue and subtreasury, in the new custom-house building at Chicago, calculated upon a basis mainly of the ascertained cost of the furniture actually and necessarily required for the transaction of the public business.

Standard furniture	$33,100 00
Counters, screens, &c	16,000 00
Post-office working-furniture	25,650 00
Carpets	16,000 00
Rugs	1,500 00
Gas-fixtures	25,000 00
Clocks	2,500 00
Cuspidors	400 00
Window-shades	1,700 00
Awnings	2,500 00
Repairs to old furniture	5,000 00
Mirrors	1,500 00
Judge's desks, platforms, railings, &c	8,000 00
Assembly chairs	1,100 00
Miscellaneous	5,000 00
Bulletin-boards	350 00
	145,300 00
Amount appropriated	90,000 00
Deficiency	55,300 00

APPENDIX D.

In relation to the estimates for salaries and expenses of Quartermaster-General's Office, and incidental expenses of Quartermaster's Department. (*See pages* 10 *and* 13.)

WAR DEPARTMENT,
Washington City, December 11, 1880.

SIR: The Secretary of War has the honor to transmit to the United States House of Representatives a copy of a report from the Quartermaster-General of the Army respecting claims pending in his office on account of the act of July 4, 1864, and acts amendatory thereof. The report shows, among other things, that the act of March 3, 1879, prescribing a limitation (ending January 1, 1880) for filing such claims, has caused an extraordinary increase in the number of claims in the Quartermaster-General's Office, with corresponding increase of public demands for settlements. These demands cannot be satisfactorily met until Congress affords further means to that end, and the means deemed necessary for the time between this date and July 1, 1882, in so far as this department is concerned, are—

1. An appropriation of $50,000, to be immediately available for use during the remainder of the current fiscal year, and of $100,000 in addition to amounts of estimates already submitted for the next fiscal year, to pay salaries and expenses of additional agents and clerks necessary to examine such claims.

2. An appropriation of $1,500, to be immediately available, "for contingent expenses Quartemaster-General's Office, 1881," the same to be used in fitting up additional rooms, purchase of furniture, and for furnishing stationery necessary for an increased clerical force.

3. An amendment of section 300 A, Revised Statutes, second edition, to substantially enact: That all claims submitted to the Quartermaster-General of the United States under the provisions of an act of July 4, 1864, and amendatory acts, which he has caused to be examined, and which are awaiting his action at any time, may be examined by any military officer designated by the President for the duty, and if said officer is "convinced that the claim is just, and of the loyalty of the claimant, and that the stores have been actually received or taken for the use of and used by the Army," he shall certify such facts to the Quartermaster-General, who shall thereupon be relieved from any further examination of that claim, and shall report the case to the Third Auditor of the Treasury with recommendation for settlement: *Provided*, That nothing in this act shall be construed to prevent the suspension or rejection of any of said claims found to be not just or not properly supported in proof of loyalty.

It is recommended that the means above suggested be granted by Congress, and that the law be further so amended as to provide for an appeal to the Secretary of War in cases where questions of law are alone involved.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., December 1, 1880.

SIR: I have the honor to acknowledge receipt of your letter of the 26th instant, calling for certain information regarding claims pending in this office under the act of July 4, 1864, and acts amendatory thereof, whether an increased force of temporary clerks to be employed specially on the work of these claims is desirable, and what additional amount of appropriation for incidental expenses for the fiscal year ending June 30, 1881, can be allotted for the work on these claims without impairing other interests of the service.

I have the honor to report on the several specific inquiries made as follows:

1. The limitation of the act of July 4, 1864, providing for the settlement of claims of loyal citizens, which expired by law January 1, 1880, has thrown upon this office a largely increased amount of labor, for the proper and speedy performance of which the present clerical force is inadequate.

Prior to the passage of the statute of limitation of March 3, 1879, the average number of claims received annually in this office is shown to have been 3,150. The average number received during the ten years from 1868 to 1878, inclusive, was 1,315 per year.

2. The number of cases presented during six months from July 1, 1879, to January 1, 1880, including the Indiana Morgan raid cases and claims from Pennsylvania, is 12,757, amounting to $7,527,051.56.

The later claims filed are unlike the majority of those filed earlier,

in that they are not accompanied by official vouchers, receipts, or certificates of officers of the Army as to the merits of the charges made.

This lack of official proof renders the investigations more tedious and difficult, and much testimony is accumulated in reaching results.

3. The number and amount of unsettled claims filed and undergoing official examination and preparation for my action may be stated in round numbers at about 5,000, amounting to about $2,725,000.

4. The number and amount of claims filed which have not yet been taken up for examination, including, however, those in the hands of officers for investigation, but not yet investigated, approximate 16,500 cases, calling for about $8,662,500.

5. The number of claims now about ready and awaiting my individual action as Quartermaster-General is 2,150, approximating in amount the sum of $1,129,275.

The total of the above is 23,650 cases; the amount is over $12,500,000.

The number of such cases ready for my final action, and for report to Congress on December 1, 1879, was 2,000. Since that date I have decided 2,449 cases.

6. The pressure of claimants, attorneys, and representatives for information regarding condition and for settlement of these claims is very great. To meet this pressure, at least so far as answering the voluminous correspondence on the subject, an increase in the number of *male* clerks is desirable. At least ten additional clerks, if good, accurate, and rapid penmen, could be profitably employed on the work.

7. The cost of investigations of these claims during the last fiscal year, including cost of services of clerks employed in briefing the evidence, reports, &c., was $132,158.23, of which $74,158.23 was charged to appropriation for incidental expenses; most of the remainder to transportation.

No more money than now is can be allotted to this duty from the appropriation for incidental expenses of the Army for the next fiscal year ending June 30, 1881.

The present monthly estimate for funds from appropriation for "incidental expenses" is $9,175, which itself cannot be continued to June 30, 1881, without additional appropriation. The Army is already complaining that its allowance from this appropriation is insufficient.

The estimated amount of additional appropriation on account of "incidental expenses" necessary to continue this work without interruption until June 30, 1881, at the cost of the present force, is $40,000. Ten additional clerks for this service, at $1,000 per year, for one year, will cost $10,000.

The number of cases investigated and reported on by officers and agents during the last fiscal year was 3,267, costing for services and expenses of agents employed in making the investigations the sum of $98,971.85, which is equivalent to an average of a little over $30 for each claim. At the same rate of time and cost it will require about five years and $495,000 to investigate the 16,800 claims not yet investigated, amounting to over $8,500,000.

Much expense can be saved by hastening the work of investigations required to be made by agents. If Congress should be requested to make any additional appropriation for the purpose of hastening this work, I think it would be wise to make the estimate therefor large enough to warrant the employment of a sufficient force of agents to increase the number of investigations to at least double the number made during the past fiscal year.

In preparing these claims for my decision, an examination by the

Third Auditor of returns and accounts of officers is necessary to each case. Verification of signatures, receipts, to *ex-parte* affidavits, &c., are made at the Second Auditor's Office, and frequent calls are made upon the Adjutant-General's Office.

It requires from three to six months to obtain replies to calls made upon the Auditors of the Treasury for information. These calls cannot be made conveniently nor intelligently until after the case has been investigated by the agents.

While, therefore, a large increase of agents and of the clerical force in this office may result in pushing forward the examination and preparation of cases so far as the work thereon is under control of this department, such increase here will not relieve the embarrassment under which the Treasury Department labors.

The Quartermaster-General cannot find sufficient time in the midst of his other duties to personally examine for final decision under the law these cases as fast as they are prepared for him by the present force, so long as the law remains as it is at present, requiring the Quartermaster-General himself to examine and report upon each case presented to him, it is not believed that much more than the usual annual number of cases can be finally disposed of.

Twenty-three thousand six hundred and fifty cases is a very large docket for one judge or arbitrator.

Very respectfully, your obedient servant,

M. C. MEIGS,
Quartermaster-General, Bvt. Maj. Gen., U. S. A.

To the Hon. SECRETARY OF WAR.

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
Washington, D. C., December 17, 1880.

SIR: In compliance with instructions contained in War Department circular of the 6th instant, I have the honor to submit herewith a deficiency estimate of $15,260 for "incidental expenses of the Quartermaster's Department" for the current fiscal year ending June 30, 1881.

This sum is exclusive of the $40,000 named in letter from this office of the 1st instant, upon the subject of a proposed increase of agents and clerks for the purpose of expediting the settlement of the large number of claims now on file.

Very respectfully, your obedient servant,

M. C. MEIGS,
Quartermaster-General, Bvt. Maj. Gen., U. S. A.

To the Hon. SECRETARY OF WAR.

APPENDIX E.

Relating to the estimate for collection and payment of bounty, prize-money, and other claims of colored soldiers and sailors. (*See page* 12.)

Attention is invited to so much of section 2, act of March 3, 1879 (copy below), as requires that certain certificates issued by the accounting officers of the Treasury Department in settlement of claims of col-

ored soldiers, &c., shall be paid by this department, and to the proviso as to the manner in which the amount due shall be paid.

Owing to the failure of Congress at its last session to make an appropriation for the current year to meet the expenses necessarily incident upon the manner of payment prescribed, this department was obliged on June 30, 1880, to cease making payments where any expense was involved in placing the money in the claimants' hands in the manner directed by the act.

This has worked great hardship to a very worthy and needy class of claimants. The money due them is in the hands of the paymaster, but he cannot pay it to them for lack of funds necessary to meet the expense of placing it in their hands.

By the said section of the same act the sum of $4,000, or so much thereof as may be necessary, was appropriated for the fiscal year 1879, and $10,000 for the fiscal year 1880. Of the first amount only $1,818.40 was disbursed during that year, and of the second only $6,586.58, leaving a total unexpended balance of $5,595.02.

On July 1, 1880, there remained in the hands of the paymaster 335 of these claims, aggregating $34,757.55.

It is believed that the above unexpended balance of $5,595.02 will be sufficient to meet the expense of paying all the claims of the class described by this act that are now on hand or that will arise, and as the work of paying them will continue from year to year until disposed of, I have the honor to recommend that Congress be asked to make available, at as early a date as possible, the above amount, in terms that will not limit its disbursement to any definite fiscal year or years.—(*Paymaster-General's letter of December* 2, 1880.)

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SEC. 2. That all sums due upon certificates issued, or which may be issued by the accounting officers of the Treasury in settlement of claims for pay, bounty, prize money, or other moneys due to colored soldiers, sailors, or marines, or their legal representatives, shall be paid by the officers of the Pay Department of the Army, under the direction of the Paymaster-General, who is already charged with the payment of like dues to white soldiers: *Provided, first,* That no such certificate shall be issued until it shall have been ascertained that the application is made by the original claimant, or, if he be dead, by his true living legal representative, nor until the identity of such claimant or representative, as the case may be, shall have been duly established: *Provided,* That if an agent or attorney be employed, the allowance for his services shall not in any case exceed that contemplated in the scale of fees and allowances fixed by the second section of a joint resolution approved July twenty-sixth, eighteen hundred and sixty-six, entitled "Joint resolution amendatory of a joint resolution respecting bounties to colored soldiers, and the pensions, bounties, and allowances to their heirs," approved June fifteenth, eighteen hundred and sixty-six, and such allowance shall be stated in a separate certificate in favor of the agent or attorney simultaneously with the issue of a certificate for the amount due the claimant: *Provided further,* That the amount due the claimant, or his living representative, or the balance due after deducting the attorney's fee, if any, shall be paid only to the party named in the certificate, and in current funds or by post-office money order, and not by checks or drafts; an[d] no power of attorney, transfer or assignment of the amount of such claims, or any part

thereof, shall in any case be recognized; and the sum of four thousand dollars, or so much thereof as may be necessary, is appropriated for the fiscal year ending June thirtieth, eighteen hundred and seventy-nine, and ten thousand dollars for the fiscal year ending June thirtieth, eighteen hundred and eighty, to meet the expenses incurred on account of payment of these claims, for salaries of agents and clerks, rent of offices, fuel and lights, stationery and printing, office furniture, , mileage and transportation of officers and agents, telegraphing, postage, and post-office money orders; and the sum of fifty thousand dollars is hereby appropriated, under the title "Pay of two and three years' volunteers reappropriated," for the payment of such of the claims in question as may be covered by Treasury certificates issued after the passage of this act, and previous to July first, eighteen hundred and eighty:

And provided further, That the sum or sums now held by the Treasurer of the United States, turned over to him under the Attorney-General's decision of December thirtieth, eighteen hundred and seventy-eight, by the chief disbursing officer of the Freedmen's Branch of the Adjutant-General's Office, as the balance in said officer's hands of moneys due and unpaid on account of adjusted claims of the class contemplated in the first clause of this section, shall be turned over to the paymaster who may be charged by the Paymaster-General with the payment of such claims, to be by him paid to the proper claimants under the restrictions imposed in said section.

* * * * * * *

Approved March 3, 1879.

APPENDIX F.

Explanation of the estimate for $5,187.42 *submitted for pay of the Military Academy.* (*Page* 12.)

HEADQUARTERS DEPARTMENT OF WEST POINT,
UNITED STATES MILITARY ACADEMY,
West Point, N. Y., October 15, 1879.

SIR: In the year 1876 the candidates for admission to the Military Academy were ordered to report at West Point in the month of April, and passed their examination for admission in the latter part of that month, two months before the usual time. They were immediately placed on duty and under instruction to prepare them for the visit of the corps of cadets to the Centennial Exhibition at Philadelphia. But these candidates were not formally admitted to the Academy until the 14th of June, the date of graduation of the first class of that year. They were thus subjected to all the usual expenses of cadets, without receiving any pay, for a period of six weeks after they had passed their examination for admission. Some of these cadets made the deficiency good by extra receipts of money from home, while others are still in debt to the treasurer of the Academy.

Of the cadets admitted at that time forty-two are now in the corps. Of these, nineteen might lawfully have been admitted on the 1st of May to fill vacancies then existing. The remaining twenty-three could not be admitted till the 14th of June, when their predecessors graduated.

It is respectfully submitted that the nineteen are lawfully entitled to a correction of their record of admission to the 1st of May, when they were *actually* admitted; and that the remaining twenty-three are entitled *in equity* to pay for the six weeks preceding their admission, during which time they were on duty.

If these views are approved by the honorable the Secretary of War,

I respectfully suggest that Congress be asked to make the necessary appropriation to cover this deficiency in the pay of these cadets.

* * * * * * *

Very respectfully, your obedient servant,

J. M. SCHOFIELD,
Major-General, U. S. A.,
Superintendent Military Academy, Commanding.

The ADJUTANT-GENERAL,
Washington, D. C.

APPENDIX G.

Explanation of the estimates for pay of two and three year volunteers; bounty to volunteers, their widows and legal heirs; and pay, &c., of the Army, 1878, and prior years. (*See page* 18.)

TREASURY DEPARTMENT,
SECOND AUDITOR'S OFFICE,
Washington, D. C., December 20, 1880.

SIR: The necessity and justice of making an appropriation in advance for the payment of arrears of pay and bounty to volunteer soldiers who served in the war of the rebellion, their widows and legal heirs, and to discharged soldiers of the United States Army, have been brought to the attention of Congress on several occasions, as will be seen by reference to the following Senate executive documents: No. 76, 45th Congress, 2d session; No. 17, 46th Congress, 1st session; and No. 136, 46th Congress, 3d session.

In April last, the House of Representatives adopted a resolution calling upon the Secretary of the Treasury to state the cause of delay in paying bounty and back pay due soldiers and other persons entitled thereto, and to report why he permitted these claims to remain unpaid from six to twelve months without asking Congress for an appropriation.

I have this day transmitted to you an estimate for the payment of claims allowed by the accounting officers under section 4, act June 14, 1878, but that estimate embraces only such claims as have been certified up to the 18th instant. There is no provision for the payment of the numerous claims already filed and awaiting their turn for settlement, nor for those that are being daily presented for adjustment. Unless a special appropriation be made it is not very probable that claims certified after this date will be paid before June or July, 1882.

In view of all the facts in the case, I deem it my duty to urgently recommend that Congress be asked to appropriate a sum sufficient to meet all claims for arrears of pay and bounty that may be certified by the accounting officers up to the close of the next fiscal year, namely, June 30, 1882.

I estimate that $300,000 will be required under the following heads of appropriation:

Pay of two and three year volunteers	$85,000
Bounty to volunteers, and their widows and legal heirs	200,000
Pay, &c., of the Army	15,000
	300,000

Very respectfully,

O. FERRISS,
Auditor.

Honorable SECRETARY OF WAR.

APPENDIX H.

Explanation of the estimates for the Government Hospital for the Insane.
(*See page* 20.)

Buildings and grounds Government Hospital for the Insane:

For repairs. The original estimate for $10,000, of which only $5,000 was appropriated, was made with a full knowledge of what repairs and improvements would probably be necessary to maintain an efficient administration of the hospital in all its departments. The $5,000 asked for repairs is needed to keep the government property from deterioration and to obviate the necessity of a much larger expenditure in the future.

Current expenses Government Hospital for the Insane:

A deficiency in the amount required for the support of the hospital. The estimated sum required and asked for the support of those patients who in accordance with the law are entitled to free provision in the hospital during the year ending June 30, 1881, was $191,250, less one-half the cost of supporting the indigent insane of the District of Columbia admitted since July 1, 1876, estimated at not far from $16,000, which is, under the law of 1876, charged to the District, leaving $175,000 to be appropriated by Congress. The amount appropriated was $143,000, the difference between the appropriation and estimate being $32,000, which is the deficiency as above stated. This estimate was made after a careful consideration of the necessary expenditures for the proper care of an assumed number of 850 free or government patients, and was designed to be as close and economical as is consistent with the welfare of the insane. The average number of indigent insane for the first month of the year has exceeded by more than twenty the number on which the estimate was based, and unless there is a very decided reduction in the number to be provided for, which we have no reason to expect, the deficiency asked will prove barely sufficient to provide all that the best care and treatment demand at our hands.—(*Superintendent Government Hospital for the Insane.*)

APPENDIX I.

Explanation of estimate for salaries and commissions of registers and receivers of land offices. (*See page* 21.)

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
Washington, D. C., January 4, 1881.

Hon. CARL SCHURZ,
Secretary of the Interior:

SIR: I have the honor to transmit herewith, in triplicate, for presentation to both houses of Congress, an estimate of deficiencies in the appropriation for salaries, fees, and commissions of registers and receivers, for the fiscal year ending June 30, 1881.

By the act of June 16, 1880, there was appropriated the sum of $386,000 for the above purpose. Of this sum there has been advanced to receivers, for the six months ending December 31, 1880, the sum of $237,727.63, leaving an unexpended balance of $148,278.37, applicable to the payment of salaries, fees, and commissions for the six months ending June 30, 1881. No returns having been received from registers and receivers

for the quarter ending December 31, 1880, I have been governed, in making the inclosed estimate, by the salaries, fees, and commissions earned by them during the six months ending September 30, 1880, and find that there will be needed the sum of $222,200, less the following amounts:

Balance standing to the credit of the appropriation	$148,278 37
Estimated balance that will be remaining in the hands of receivers at the close of the quarter ending December 31, 1880	18,521 63
Total applicable to the payment of salaries, fees, and commissions during the remainder of the fiscal year	166,800 00
Leaving an estimated deficiency to be appropriated	55,400 00

The salaries, fees, and commissions of registers and receivers are regulated by law, and cannot in any instance exceed the sum of $3,000 per annum each. There are now ninety-six local offices, and a large number of them earn the maximum; the balance ranging from one half that amount upwards. The returns of registers and receivers are very closely scrutinized by this and the First Comptroller's offices, and the fees and commissions are based upon the amount of land disposed of, and other work performed by them in connection with contests, &c. Ninety-six thousand dollars per annum are required to pay the salaries (which are $500 each) of these officers, leaving a balance of $296,000 of the appropriation available for fees and commissions, which is wholly inadequate for that purpose.

The disposal of the public lands is increasing every year, and I earnestly request that the attention of Congress may be called to the necessity of appropriating sufficient moneys to defray these expenses, which are provided for by law, in order that deficiencies may be hereafter avoided.

Very respectfully,

J. A. WILLIAMSON,
Commissioner.

Statement of deficiencies in salaries, fees, and commissions of registers and receivers for the fiscal year ending June 30, 1881.

Land offices.	Amounts needed to June 30, 1881.
Alabama.	
Huntsville	$3,000 00
Montgomery	3,000 00
Arizona.	
Florence	1,600 00
Prescott	1,300 00
Arkansas.	
Camden	3,000 00
Dardanelle	2,000 00
Harrison	2,300 00
Little Rock	3,000 00
California.	
Bodie	3,000 00
Humboldt	2,300 00
Los Angeles	1,700 00
Marysville	3,000 00
Sacramento	3,000 00
San Francisco	3,000 00
Shasta	2,500 00
Stockton	3,000 00
Susanville	1,700 00
Visalia	1,800 00
Colorado.	
Central City	$32,800 00
Del Norte	1,700 00
Denver City	3,000 00
Leadville	3,000 00
Lake City	2,500 00
Pueblo	3,000 00
Dakota.	
Bismarck	1,300 00
Deadwood	3,000 00
Fargo	3,000 00
Grand Forks	3,000 00
Mitchell	3,000 00
Watertown	3,000 00
Yankton	3,000 00
Florida.	
Gainesville	3,000 00
Idaho.	
Boise City	1,500 00
Lewiston	2,600 00
Oxford	2,000 00

Statement of deficiencies in salaries, fees, and commissions, &c.—Continued.

Land offices.	Amounts needed to June 30, 1881.
Iowa.	
Des Moines	$1,700 00
Kansas.	
Concordia	3,000 00
Independence	3,000 00
Kirwin	3,000 00
Larned	3,000 00
Salina	3,000 00
Topeka	1,800 00
Wa-Keeney	3,000 00
Wichita	3,000 00
Louisiana.	
Natchitoches	1,100 00
New Orleans	1,000 00
Michigan.	
Detroit	1,000 00
East Saginaw	1,100 00
Marquette	3,000 00
Reed City	3,000 00
Minnesota.	
Benson	3,000 00
Crookston	3,000 00
Duluth	1,300 00
Fergus Falls	3,000 00
Redwood Falls	2,700 00
Saint Cloud	3,000 00
Taylor's Falls	1,100 00
Tracy	3,000 00
Worthington	2,700 00
Mississippi.	
Jackson	1,500 00
Missouri.	
Boonville	1,600 00
Ironton	1,400 00
Springfield	1,500 00
Montana.	
Bozeman	1,400 00
Helena	3,000 00
Miles City	1,000 00
Nebraska.	
Bloomington	3,000 00
Beatrice	2,500 00
Grand Island	3,000 00
Lincoln	2,500 00
Niobrara	3,000 00
Norfolk	3,000 00
North Platte	3,000 00
Nevada.	
Carson City	$1,300 00
Eureka	1,400 00
New Mexico.	
La Mesilla	800 00
Santa Fé	2,600 00
Oregon.	
La Grande	3,000 00
Lake View	900 00
Oregon City	3,000 00
Roseburg	2,500 00
The Dalles	2,700 00
Utah.	
Salt Lake City	3,000 00
Washington.	
Colfax	3,000 00
Olympia	3,000 00
Vancouver	2,600 00
Walla Walla	3,000 00
Yakima	1,500 00
Wisconsin.	
Bayfield	1,500 00
Eau Claire	1,600 00
Falls Saint Croix	1,400 00
La Crosse	1,100 00
Menasha	1,300 00
Wausau	1,500 00
Wyoming.	
Cheyenne	1,200 00
Evanston	800 00
Total	222,200 00
Deduct balance standing to the credit of the appropriation	$148,278 37
Estimated balances that will be remaining in the hands of receivers at the close of the quarter ending December 31, 1880	18,521 63
Total applicable to the payment of salaries, fees, and commissions during the remainder of the fiscal year	166,800 00
Leaving an estimated deficiency to be appropriated	55,400 00

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 45.

SURVEY OF CERTAIN STREAMS IN NEW JERSEY AND NEW YORK.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of survey of Mattawan Creek, Shark River, Perth and South Amboy ship channel, in New Jersey, and Ticonderoga River, in New York.

JANUARY 18, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 17, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers dated the 15th instant, and accompanying copies of reports from Lieut. Col. N. Michler, Corps of Engineers, upon examinations and surveys made in compliance with the requirements of the river and harbor act of June 14, 1880, of Mattawan Creek, New Jersey; Shark River, New Jersey; Perth and South Amboy to main ship channel off Great Kills, Raritan Bay; and of Ticonderoga River, New York.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
Of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 15, 1881.

SIR: In compliance with requirements of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Lieut. Col. N. Michler, Corps of Engineers, of the results of examinations and surveys made under his direction at the following localities, with the view to improvement, viz:

1. Mattawan Creek, New Jersey; from Raritan Bay channel to Central Railroad bridge, head of navigation.

2. Shark River, New Jersey.
3. Perth and South Amboy to main ship channel off Great Kills, Raritan Bay.
4. Ticonderoga River, New York.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY OF MATTAWAN CREEK, FROM RARITAN BAY CHANNEL TO CENTRAL RAILROAD BRIDGE, HEAD OF NAVIGATION.

UNITED STATES ENGINEER OFFICE,
New York, January 3, 1881.

GENERAL: Section 2 of the river and harbor act, approved June 14, 1880, directs the Secretary of War to cause an examination or survey, or both, to be made of "Mattawan Creek, from Raritan Bay channel to Central Railroad bridge, head of navigation."

This stream is designated on Coast Chart No. 2, New York Bay and Harbor, as Middletown Creek, and empties into the bay a short distance west of Keyport, N. J. It was decided to make a careful survey of the locality so as to decide upon the nature of the improvement to its channel, should any be deemed necessary.

The accompanying report of Assistant Engineer Doerflinger furnishes in detail the manner in which the survey of the creek was conducted, and proposes the only plan by which its navigation can be improved for the benefit of the adjacent country, together with an approximate estimate of the cost of the undertaking. The inclosed map supplies all additional information as to the nature of the banks, the meanderings of of the stream, and the soundings reduced to the plane of mean low-water; it also indicates the localities, as well as the limits and extent of the sections to be dredged, should it be deemed advisable to prosecute the work. At present the locality is accessible by the New York and Long Branch division of the Central Railroad; a steam propeller also plies daily at some seasons of the year, and at others tri-weekly, between the creek and New York, and a few sailing vessels and canal-boats are employed. The principal articles of shipment are country produce, assorted merchandise, brick, lumber, coal, lime, iron ore, and wood; these are valued, at present, at about $800,000 annually. By the proposed enlargement of the channel-way and increased facilities for shipping goods, it is computed that there would be a growth in the commerce of from one-third to one-half, and that a large portion of Monmouth County would be benefited. Manufacturers would also be induced to locate there, as inquiries have already been made as to whether the creek is easy of access by water. It is estimated that $33,120 will be required for the completion of this work of improvement.

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Very respectfully, your obedient servant,

N. MICHLER,
Lieutenant-Colonel of Engineers, Bvt. Brig. Gen., U. S. A.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. A. DOERFLINGER, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
New York, January 3, 1881.

SIR: I have respectfully to submit the following report on the survey of Mattawan Creek, New Jersey:

The field work embraced the course of the creek from its mouth, where it discharges into Raritan Bay at Keyport, to the head of navigation, at the crossing of the New York and Long Branch Railroad bridge, a distance of 2 miles. The bed of the stream lies generally through low marsh and meadow lands, the average level of which is about that of mean high-water. It is a characteristic feature of the stream, and one very favorable to its navigation, that its course is less sinuous than is generally found in streams of this class; this sinuosity, in addition to the shoal water generally found, makes navigation difficult on account of the many sharp bends that are encountered.

* * * * * * * *

The plane of mean high and low water at Keyport having been already established by observations made under the direction of Col. John Newton, Corps of Engineers, in 1872, no additional ones were necessary; two tide-gauges were, however, set up, one at Mattawan Dock, Keyport, and the other on the railroad bridge at the upper limit of the survey; these were connected by a line of levels with the bench-mark at Keyport, as established by the survey of 1872. From simultaneous observations made on these gauges it was found that the tidal wave on its passage up the creek undergoes but little change, the rate being practically the same at both gauges; this shows that no undue obstruction to the tidal flow exists between the two points, and accounts for the generally good depth of water found in the lower part of the creek. From the mouth of the Mattawan up that of Winkson Creek, where the latter empties into the main stream, between 4 and 5 feet of water at low-tide can be carried with from 50 to 75 feet between the curves of 4 feet. Above Winkson Creek the 4-foot curve contracts very rapidly, and finally disappears, only occasional spots, with a depth of 4 feet occurring further up stream. Between the mouth of the main creek and Mattawan Dock, Keyport, the 4-foot curve is again interrupted by a mud flat with only from 2 to 3 feet depth of water in the channel across the same. A channel of 4 feet at mean low-water and about 100 feet in width across this flat, together with a deepening of the channel above Winkson Creek to the same depth and to a width of 75 feet, would probably meet all the present requirements of the shipping interests of the locality. A steamboat now plies regularly between Ellis Dock and New York City, her general freight being garden produce from the rich farms of Monmouth County. The other shipping of the creek consists principally of brick from the factories located along and adjacent to it. This traffic is generally carried on in sloops and schooners drawing from 4 to 7 feet. A 4-foot channel would allow the smaller of these vessels to ascend the creek at or near low-water, and the larger at about half-tide. The most practicable plan of executing any desired improvement is by widening and deepening the channel by means of dredging. It may be necessary, however, to renew this operation from time to time, especially across the flat at the mouth of the creek. Owing to the difficulty of disposing of the dredged material, and the shoal water in which the operations are to be carried on, the cost of dredging will be high; probably not less than 60 cents per cubic yard.

The estimated cost of the improvement is as follows:

	Cubic yards.
Dredging channel through flat at the mouth of the creek 100 feet wide and 4 feet deep at mean low-water	12,000
Dredging channel from Winkson Creek to Central Railroad bridge 75 feet wide and 4 feet deep at mean low-water	36,000

SUMMARY.

To 48,000 cubic yards of dredging, at 60 cents per cubic yard	$28,800
To contingencies and engineering, 15 per cent	4,320
Total estimated cost of improvement	33,120

Very respectfully, your obedient servant,

A. DOERFLINGER,
Principal Assistant Engineer.

Bvt. Brig. Gen. N. MICHLER,
Lieutenant-Colonel of Engineers, U. S. A.

EXAMINATION AND SURVEY OF SHARK RIVER, NEW JERSEY.

UNITED STATES ENGINEER OFFICE,
New York, January 3, 1881.

GENERAL: Section 2 of "An act making appropriations for the construction, repair, completion, and preservation of certain works on rivers and harbors, and for other purposes," approved June 14, 1880, directs the Secretary of War to cause an examination or survey, or both, and an estimate of the cost of improvement, to be made of "Shark River, New Jersey."

The inclosed report of Assistant Engineer Doerflinger, in connection with the accompanying map of the river, furnishes all desired information in regard to the detailed survey.

As will be fully understood from the facts as presented the actual condition of the commercial interests of the immediate locality, and of the adjacent country, do not appear to justify the expenditure of the large amount necessarily required to construct such works as would render the small harbor formed by the lower basin of Shark River either accessible to seagoing vessels or sufficiently commodious for anchorage ground. Under the present condition of affairs it does not seem advisable to undertake any work of improvement, and therefore no project is submitted for the consideration of the Chief of Engineers.

Very respectfully, your obedient servant,

N. MICHLER,
Lieutenant-Colonel of Engineers, Bvt. Brig. Gen., U. S. A.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. A. DOERFLINGER, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
New York, January 2, 1881.

SIR: I have the honor to submit the following report on the examination and survey of Shark River, New Jersey:

Shark River discharges into the Atlantic Ocean about 20 miles south of Sandy Hook. It extends inland nearly 10 miles, and drains a comparatively small section of the adjacent country. Some 2 miles above its mouth it enlarges from a narrow stream to a basin over a mile wide, and of nearly the same length. The depth of this basin varies from 1 to 3 feet. At its lower end its width contracts to about 900 feet, but the actual water section is still further reduced to about 600 feet by islands of low marsh land; the tidal flow is further obstructed by the piles and timbers of the wooden trestle-bridge of the Long Branch Railroad, which spans the river at this point. Five hundred feet below the latter structure again the river is crossed by a second wooden trestle-bridge, the length of which is 900 feet. Neither of these bridges is provided with a draw, and they therefore shut off all communication, other than by row-boats, between the upper basin and the lower portion of the river. The section immediately above the mouth is the one had under examination with a view to its improvement.

The field work of the survey was executed by the party in charge of Mr. M. A. Lacy, assisted by Mr. F. D. Y. Carpenter, between October 29 and November 4, 1880, the same general method being followed as that employed in the survey of Mattawan Creek. A glance at the map shows that the river bed, which consists of sand, is very irregular in figure, being made up of a series of pools from 4 to 8 feet deep, and of shoals dry at low-water. The inlet, at the date of the survey, had the position shown on the chart, the bar on the outside being dry at low-water, and was slowly working to the northward in a manner characteristic of similar ones along this coast. This shifting tendency of the inlet accounts in a measure for the irregularity of the river bottom; since, as the position of the inlet changes, the force and direction of the tidal currents are also changed, and thus new channels are scoured out and new shoals thrown up.

Owing to the limited amount available for the purposes of the survey, no extended series of tidal observations were made; two gauges were, however, set up, one directly

inside of the inlet and the other at the railroad bridge, and observed simultaneously during the progress of the survey. The time of change of current in the inlet and at the railroad bridge was also noted. From these observations it was found that the average rise and fall of tides at the inlet is $1\frac{4}{10}$ feet, which decreases to $\frac{7}{10}$ of a foot at the bridge. The rise and fall of tide in the ocean at this point is about 4 feet. This great difference in the tidal range gives rise to strong currents in the inlet, the velocity of which, by observations made on surface floats, was found to be 5 miles per hour. Although no systematic series of current observations were made, the following considerations seem to warrant the conclusion that the flood current is considerably stronger than the ebb. The mean duration of rise of tide was found to be $7^h\ 20^m$, and mean duration of fall $5^h\ 6^m$. Also mean duration of flood current $8^h\ 10^m$, whilst the mean duration of ebb current is but $4^h\ 15^m$. As the average volume of water passing in through the inlet is equal to that passing out, less the fresh-water discharge of the river, the latter being very small compared to the tidal prism, and as it takes nearly twice as long to discharge this volume as it takes the same to pass in through the inlet, the above conclusion seems justified. The flood current being stronger than the ebb, the natural tendency of the current action must be that the material removed by scour will, under the preponderating action of the flood current, work its way up stream, new shoals in the river and in the basin being the result of this action.

To secure permanency to the inlet and a modification of the existing current conditions must, therefore, be essential features of any plan of permanent improvement. To effect this object would necessarily involve the construction of extensive works, the cost of which would be entirely disproportionate to any benefits to be derived from the improvement. As far as could be learned, the river at present is entirely without commerce, and no commercial or agricultural interests would be benefited, even were the inlet in a condition to admit light-draught vessels to enter and pass out of the same. The river at present is available only for the use of fishing and pleasure boats during the warm season, the greater number of which are owned and used by residents of Ocean Beach, a summer resort located on the south shore of the river.

I am, very respectfully, your obedient servant,

A. DOERFLINGER,
Principal Assistant Engineer.

Lieut. Col. N. MICHLER,
Corps of Engineers, Bvt. Brig. Gen., U. S. A.

SURVEY FROM PERTH AND SOUTH AMBOY TO MAIN SHIP CHANNEL OFF GREAT KILLS, RARITAN BAY.

UNITED STATES ENGINEER OFFICE,
New York, December 29, 1880.

GENERAL: Section 2 of the river and harbor act, approved June 14, 1880, provides "that the Secretary of War be directed, at his discretion, to cause examinations or surveys, or both, and estimates of cost of improvement proper to be made" at certain points.

Of those named in the act the following, among others, was assigned by your direction to my charge: "Perth and South Amboy to main ship channel off Great Kills, Raritan Bay."

In this case it was decided to make a detailed survey, in order to determine upon the nature of the proposed improvement to the channel, so as to render it navigable for the largest class of sea-going vessels. The accompanying report of the survey in detail, prepared by my principal assistant engineer, is respectfully submitted; it is accompanied by a map of the same, together with a project for and an estimate of the cost of the necessary improvement.

The appended letters from and summary statements furnished by the collector of the port of Perth Amboy embrace such information concerning the commercial importance, present and prospective, of the improvement contemplated thereby, and such general commercial statistics as could be procured at the time.

The project for deepening the channel appears, after a careful personal

inspection of the locality, to be the only one applicable, and one which can be practically and successfully executed.

The greatly increased demands of commerce will justify, as is believed by those who have studied the great commercial interests of the country, the expenditure of the amount required for its execution. The grand chain of railroads already in operation or in course of construction or farther extension will render the approach to the safe and beautiful harbor of Perth Amboy by the largest of sea-going vessels an absolute necessity. The estimated cost of making the partial improvement as proposed at this time is $126,500. The price per cubic yard for dredging is deemed reasonable, and is based upon that paid at other localities, and in consideration of the probable decrease in the number of working days, owing to the exposure to severe weather in an open and exposed sheet of water as extensive as the Raritan Bay. The latter is certainly one of the most beautiful inland bays on the coast, and offers at all times a safe anchorage and harbor of refuge for outward or inward bound seafaring vessels or sea-coasters during the prevalence of severe storms. The table on the map affords information in regard to the currents and tides.

The following papers and map accompany this report:

Map of Raritan Bay, on which are indicated the metes and bounds of the projected channel improvement.

Report of principal assistant engineer, A. Doerflinger.

Letter of the collector of the port of Perth Amboy to Col. John Newton, United States Engineers, concerning commercial statistics. Letter of the collector of the port of Perth Amboy to the legislature of the State of New Jersey, inclosing official statements and other papers relating to the improvement of the ship channel.

Very respectfully, your obedient servant,

N. MICHLER,
Lieutenant-Colonel of Engineers.

The CHIEF OF ENGINEERS, *U. S. A.*

REPORT OF MR. A. DOERFLINGER, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
New York, December 27, 1880.

SIR: I have respectfully to submit the following report on the survey from Perth and South Amboy to main ship-channel off Great Kills, Raritan Bay. The field work was executed between August 27 and October 16; it embraced the development of about 24 square miles of hydrography, and the survey of about 22 miles of shore line.

* * * * * * *

The plane of mean high and low water at South Amboy being already established by observations previously made under the direction of Col. John Newton, Corps of Engineers, no continuous tidal observations were necessary: gauges were, however, set up at Perth Amboy, Seguine Point, entrance to Cheesequake Creek, and Keyport, and observed simultaneously with the established gauge at South Amboy at different periods of one lunation.

From these observations it appears that the tidal rise and fall, as also the tidal intervals at the different points mentioned, are practically the same, except during the prevalence of high winds from certain quarters, when small differences in the tidal range and tidal intervals occur. In order to determine the velocity and direction of the tidal drift current observations were made in the vicinity of Great Beds Light and off Seguine Point, during the maximum velocity of ebb and flood currents. For this purpose free spar-floats, extending from the surface to below mid-depth, were used, the position of the float being determined at intervals of one minute by means of transit observations from two stations on shore. From these observations it appears that at both localities the ebb and flood currents run in nearly opposite directions, the ebb attaining its minimum about $2^h\ 20^m$ after the preceding high-water, and the flood its maximum about $2^h\ 25^m$ after the preceding low-water; the change from ebb to

flood and from flood to ebb current happening at about the time of low and high water stand respectively.

An inspection of the map shows that the deep water of the main ship-channel extends to within about 2 miles of Seguine Point, whence the depth gradually decreases from 24 feet to 14½ feet. From Seguine Point to the docks of Perth Amboy there is again a good channel, with a least depth of 21 feet at mean low-water. As shown by the borings made to a depth of 28 feet below low-water, the shoal separating these two channels consists entirely of soft mud, and its existence seems to be due mainly to the action of the tidal currents. The current observations show that as the ebb current leaves Seguine Point a gradual diminution of velocity takes place. The carrying capacity and force of the current being thus reduced the material held in suspension is deposited, the shoal being the result of this action. Any plan of improvement looking to a permanent deepening of the channel across this shoal will therefore necessarily involve the construction of works having for their aim a modification of the tidal currents.

Dredging a channel across the shoal alone will in all probability not effect a permanent improvement, and the same operation may have to be renewed from time to time in order to maintain a sufficient depth. As almost the entire bay is, however, taken up by oyster-beds, the inhabitants of the adjacent shores being largely engaged in oyster culture, the execution of any work, such as the construction of a jetty across the shoal, will likely meet with opposition from this interest. Owing to the forcible action of the waves, to which the work would necessarily be exposed, and the difficulty of obtaining a solid foundation, the construction would also be of a very expensive character. The system of construction best suited to the local conditions seems to be a jetty of rubble stone of suitable size, thrown in *á pierre perdue*, and built up to above high-water. As the settlement of stone in the soft mud bottom will likely be very great, and cannot be definitely determined beforehand, an approximate estimate only of cost can be given, which would be probably not less than $60 per linear foot. To be effective the jetty would have to be carried out from Seguine Point, at least as far as the 18-foot curve of the main ship-channel, a distance of 7,500 feet; the probable cost would, therefore, be about $450,000. In addition to the great cost of such a work, another objection to its execution presents itself; this arises from the fact that while facilitating the passage of deep-draught vessels from the main ship-channel to Perth Amboy, the structure would form a serious obstruction to the numerous light-draught vessels plying between New York Harbor and Perth Amboy, and other points on the Raritan River; they would then have to round its outer extremity, and be compelled to keep farther off from the Staten Island shore, under the lee of which they now pass during the prevalence of high north and westerly winds. From the foregoing considerations it seems that all the interests concerned would be best conserved by forming a channel across the shoal entirely by means of dredging. As this would form part of the project, even should the jetty be constructed, it appears advisable to resort to this remedy first; should it be subsequently found necessary to construct the jetty in order to maintain the depth in the dredged channel, and should the commercial interests of Perth Amboy justify the increased expenditure, this can be done without any great additional cost for dredging.

The following is the estimate of cost of opening by means of dredging a channel 300 feet in width and 21 feet in depth at mean low-water, to connect the deep water of the main ship-channel with the deep water to the west of Seguine Point.

Dredging 460,000 cubic yards of mud at 25 cents per cubic yard	$115,000
Engineering and contingencies at 10 per cent	11,500
Total	126,500

The execution of the detailed instrumental survey was intrusted to Assistant Engineers M. A. Lacy and Frank D. Y. Carpenter.

Very respectfully, your obedient servant,

A. DOERFLINGER,
Principal Assistant Engineer.

Lieut. Col. N. MICHLER,
Corps of Engineers, Bvt. Brig. Gen. U. S. A.

LETTERS OF COLLECTOR OF CUSTOMS AT THE PORT OF PERTH AMBOY, NEW JERSEY.

1.

CUSTOM-HOUSE, PERTH AMBOY, N. J.,
Collector's Office, November 29, 1879.

SIR: An article published in the New York Times of the 28th instant, relative to your annual estimate to be presented to Congress for public buildings, light-houses, and for improving rivers and harbors of New York, New Jersey, &c., called my attention to the items for rivers located in this collection district; among which there is for Raritan River $100,000.

In this connection I desire respectfully to invite your attention to an obstruction in the channel from Sandy Hook to Perth Amboy. By a glance at a Coast Survey chart of 1875, "New York entrance," you will notice that a "bar" exists from near Seguine's Point on one side, where 19½ feet is shown, to deep water on the other side (on a direct line Navy trial course) or to the 24-foot curve. On this bar 14½ feet at mean low-water is shown; the bottom is soft, and into which, I am informed by one of our pilots, a lead can be thrown 2 feet. A course or channel can be opened through this bar at a small expense (comparatively). It really requires no expenditure for surveying; steam dredges could remove sufficient mud and sand to admit steamships coming up to our docks drawing up to 27 feet with their cargoes, and I believe the depth would be maintained by the current. The importation of iron ore from Bona, Africa, Bilboa, Spain, and other places into this port during the past year has been considerable (am unloading *two* sailing vessels now, finished *one* last week, four others are due), and is sure to increase. One company alone, the Bethelem Iron Company, has a contract for 40,000 tons a year for three years to come from Africa, and could steamships of 25 to 27 feet draught come over this bar the largest portion would be brought into this port, it being the nearest point to their iron-works, over the Lehigh Valley Railroad.

By chartering vessels of this draught freights are 20 to 25 cents per ton less, because of the larger quantity they are capable of carrying.

Several such steamships so laden arrived in the lower bay not drawing over 22 or 23 feet. They could not come over this bar and went to New York, where the ore was taken out, put upon lighters, and brought here; all of which handling very materially increases its cost.

Our export will also largely increase, a very large portion of which now goes to New York on lighters, and there loaded directly on steamships.

The largest part of oysters shipped to England and Germany are the product of this district. Grain, slate, and other articles are also taken to New York for export, that port getting the sole benefit and credit.

I would, therefore, earnestly urge that an appropriation, not to exceed $50,000, be recommended for this purpose, or so much of said amount as may be found necessary. If this cannot well be done now, then I would suggest that the amount recommended for the Raritan River ($100,000) may be divided, and $50,000 made for each. It is well known that vessels cannot come down the Raritan from above New Brunswick. To that city they come through the Delaware and Raritan Canal; and to pass up this river they must first come up the bay or Kill Von Kull Sound. Therefore the removal of this bar in the channel as indicated, or the cutting through at some other point, say above Round Shoal, is of vastly more importance to the business and commercial interests of the country than is the improvement of the Raritan River.

I am, sir, very respectfully, your obedient servant,

CHAS. H. HOUGHTON,
Collector.

To Col. JOHN NEWTON,
Corps of Engineers, U. S. A.

2.

CUSTOM HOUSE, PERTH AMBOY, N. J.,
Collector's Office, February 23, 1880.

In support of the joint resolution offered by Mr. Board, of Middlesex, and which was referred to the Committee on Federal Relations, calling upon Congress to make an appropriation for removing obstructions in the channel to Perth Amboy, I have the honor to submit herewith official statistics and other papers relating thereto.

Respectfully,

C. H. HOUGHTON,
Collector.

To the Hon. the LEGISLATURE *of the State of New Jersey.*

Summary statement showing the number and tonnage of vessels entering into and clearing from the port of Perth Amboy with cargoes; the number owned and documented in the district, with tonnage; and the number of men employed in navigation of same, for fiscal year ending June 30, 1879, *and for six months ending December* 31, 1879.

Vessels.	Number.	Tonnage.	Number of men employed.
Entered coastwise	199	43, 765	1, 028
Cleared coastwise	90	18, 547	347
Entered from foreign ports (American)	4	1, 567	29
Entered from foreign ports (foreign)	9	4, 474	98
Cleared to foreign ports (American)	40	15, 286	270
Cleared to foreign ports (foreign)	25	3, 713	153
Documented in district	560	48, 485	2, 284
Totals	927	135, 837	4, 209

CUSTOM-HOUSE, PERTH AMBOY, N. J.,
Collector's Office, February 21, 1880.

Supplementary statement to sheet No. 1 *for six months ending December* 31, 1879.

Vessels.	Number.	Tonnage.	Number of men employed.
Entered coastwise	67	7, 915	188
Cleared coastwise	26	9, 058	182
Entered from foreign ports (American)	11	3, 806	85
Entered from foreign ports (foreign)	10	4, 293	96
Cleared to foreign ports (American)	1	62	2
Cleared to foreign ports (foreign)	13	2, 094	75
Documented in district	564	49, 905	2, 300
Totals	695	77, 133	2, 928

Vessels documented in district; gain six months, 4—1,420 tons.
Vessels documented in district; gain over 1878, 71—8,991.05 tons.
Number of vessels documented in district 1875, 412—36,876.29 tons.
Number of vessels documented in district 1876, 457—40,467.27 tons.
Number of vessels documented in district 1877, 472—41, 446.97 tons.
Number of vessels documented in district 1878, 489—39,493.62 tons.

Value of merchandise exported to foreign countries from the district of Perth Amboy, New Jersey, viz:

1878	$134, 081 00
1879	134, 657 00
And 6 months of 1879	16, 889 00

Value in gold of merchandise imported into the district of Perth Amboy, New Jersey, viz:

1875	$12, 589 69
1876	9, 816 11
1877	3, 533 00
1878	4, 503 00
1879	17, 980 00
And for 6 months ending December 31, 1879	42, 985 85

Respectfully submitted.

CHARLES H. HOUGHTON,
Collector.

STATEMENT OF RECEIPTS AT CUSTOM-HOUSE, PERTH AMBOY, NEW JERSEY.

For year ending June 30, 1878	$6,235 33
For year ending June 30, 1879	9,379 46
For 6 months ending December 31, 1879	15,711 68

The value of merchandise taken from this port and district to port of New York on lighters, and there laden on vessels for export, can only be estimated; but it is safe to place the value for two years at $250,000, and which is credited to New York in the value of her exports. And also the value of imported merchandise which has been entered and duty paid at port of New York, and from thence brought to Perth Amboy on lighters, can only be approximated; but it will certainly reach $250,000 more, and New York receiving the sole benefit, this bar being the main cause. It is almost impossible to correctly estimate the large number of vessels arriving at and departing from the Amboys with cargoes for domestic use; the exact number could not be reached by the records kept in the many shipping offices on the docks. My inspector has, however, boarded within a period of six months over 1,300 vessels, which would not, in my estimation, cover over one-fourth part. The number must be largely increased as new enterprises develop. A rolling-mill is now soon to start at South Amboy. This must add imports and shipping generally. I am of the opinion that, as soon as this bar or obstruction is removed, the amount of imports to Perth Amboy will be at least four times the present amount, and exports also will have a corresponding increase.

* * * * * *

I concluded that the proper course for me to pursue, where a measure of this importance affecting the commercial and manufacturing interests of our entire State, and in fact every State in the Union, was to be advocated, is to place the same before your honorable bodies in order that it might, if deemed advisable, receive that official recognition which its importance demands. The necessary appropriation should be made by Congress before its adjournment. The removal could be effected during the summer.

Respectfully submitted.

CHARLES H. HOUGHTON,
Collector.

SURVEY OF TICONDEROGA RIVER, NEW YORK.

UNITED STATES ENGINEER OFFICE,
New York, January 10, 1881.

GENERAL: The act, approved June 14, 1880, "making appropriations for the construction, repair, completion, and preservation of certain works on rivers and harbors," authorizes, in one of its sections, the Secretary of War to cause an examination or survey, or both, to be made of Ticonderoga River, New York, and to submit an estimate of the plan and cost of any improvement of the same, should it prove advisable to make any. This duty having been assigned to me, instructions were given to Assistant Engineer D. White to make a detailed survey of the river. His report, together with a tracing of the map prepared by him, are herewith inclosed, and respectfully submitted for the information of the Chief of Engineers. As they afford so much useful information in regard to the past and present navigation of the river, and furnish such reliable statistics concerning the extensive manufacturing interests centered along it, presenting at the same time a comprehensive plan of improvement to meet any present requirements, with the estimated cost of the same, the subject becomes one of considerable importance, and worthy of a favorable consideration. In the future, should the commercial interests demand it, a continuous channel-way connecting the waters of Lakes George and Champlain might be made available by the construction of locks to overcome the several intervening waterfalls. The estimated cost of dredging a new channel-way at such

points as are necessary throughout the entire length of the river, and of the protection by piling of one of the sections near its outlet into Lake Champlain, is placed at $42,516.

Very respectfully, your obedient servant,

N. MICHLER,
Lieut. Col. of Engineers, Bvt. Brig. Gen. U. S. A.

The CHIEF OF ENGINEERS, U. S. A.

Statement of the annual commerce, viz, exports and imports, of the village of Ticonderoga, Essex County, New York, located on the Ticonderoga River.

Names of corporations and firms.	Tonnage.	Value.	Remarks.
Horicon Iron Company	12,500	59,500	Iron and iron ore.
Ticonderoga Pulp Company	4,000	30,750	Wood, coal, and pulp.
American Graphite Company	3,000	30,000	Lead.
Lake George Manufacturing Company	1,026	289,668	Cotton, cloth, &c.
Glens Falls Pulp Company	2,500	27,750	Wood and pulp.
Lake George Pulp Company	1,500	30,500	Do.
Lake Champlain Manufacturing Company	500	13,000	Lumber, &c.
Ticonderoga Woolen Mills	320	120,310	Wool and cloth.
William Hooper & Co	500	50,000	Machinery, &c.
Patterson & Merchant	504	11,075	Grain and plaster.
George C. Weed	1,620	13,000	Lumber.
W. D. Coates	1,980	19,500	Do.
Peck & Howard	1,500	21,600	Do.
John Jalet	500	12,500	Do.
Needham Brothers	300	4,620	Spool stock.
Gilligan & Stevens	3,755	100,750	Shippers, &c.
26 mercantile firms	1,281	268,700	Merchandise.
All other shippers	300	50,000	Horses, &c.
Total tons and value	37,586	1,156,223	

TATE OF NEW YORK,
County of Essex, ss:

Clayton H. Delano, treasurer of the Ticonderoga Pulp Company, within mentioned; William Hooper, of Hooper & Company, and superintendent Graphite Company; Morton Butler, superintendent Horicon Iron Company; William E. Calkins, being severally duly sworn, depose and say that they are residents of said town of Ticonderoga, and engaged in business therein, and have been such for the last ten years and upwards, and are generally acquainted with the business of said town, and that the within statement is true and correct in every particular, to the best of the information and belief of deponents.

That the statement of amounts and value are made in some instances from personal knowledge, and in all cases from statements carefully made out by the same persons and managers of the said firms and companies, and we verily believe the same to be practically reliable in each instance.

CLAYTON H. DELANO.
WILLIAM HOOPER.
MORTON BUTLER.
WILLIAM E. CALKINS.

Sworn to before me this 10th day of December, 1880.

[NOTARIAL SEAL.]

JOHN C. FENTON,
Notary Public, Essex County.

REPORT OF MR. D. WHITE, ASSISTANT ENGINEER.

FORT MONTGOMERY, ROUSE'S POINT, NEW YORK,
December 28, 1880.

SIR: I have the honor to submit the following report of the examination of Ticonderoga River, New York, made in conformity with your instructions, "For the purpose of making an examination and estimate of the cost of improvement proper to be made at that point." Ticonderoga River is wholly within Essex County, New York, and lies in a deep valley formed by the foot-hills of the Adirondack Mountains, which tower up from its banks on either side. It has a length of about 3 miles, and extends in a circuitous course, northeasterly to southeasterly, from the northern end of Lake George through the village of Ticonderoga, where it forms a "basin" at the foot of the falls. This part of the river is about 1 mile in length, and has an average width of about 90 feet. From Ticonderoga for a distance of 2 miles, with a varying width between banks of from 125 to 1,800 feet, it flows in an easterly direction, emptying into Lake Champlain 25 miles north of Whitehall, the head of the lake. This stream conveys the waste waters of Lake George, together with the drainage of the adjacent hills, to Lake Champlain. Its declivity from Lake George to the basin is 222 feet, consisting of five consecutive water-falls; these are said to have an average flow amounting to 26,700 cubic feet per minute, thus affording an almost unlimited amount of power for purposes of manufacture. Its current below the falls, however, is sluggish, and evidently too feeble to produce any very material scouring effect upon its bed.

In consequence of ice at the time of the survey the velocity of the current could be determined in the basin only, where it was found to amount to 6,800 feet per hour. Its velocity is probably not much greater at any time, as the stream is not subject to violent freshets, owing to the presence of a dam across the outlet of Lake George; this converts the lake into a storage reservoir for the surplus waters at spring and fall, and the discharge is regulated by gates in the dam. About $1\frac{3}{8}$ miles below Ticonderoga village there was extended across the river in 1873–'74 an embankment forming a part of the New York and Canada Railroad, which skirts the western shore of Lake Champlain. In this embankment, at the north bank of the stream, there is a drawbridge with openings of 30 and 50 feet respectively, at either side of the central pier for the egress of the waters and the passage of boats.

As wil be seen by the chart herewith respectfully inclosed, the water-way both above and below the railroad embankment has become so contracted and filled by flats or "intervals" as to reduce its width to about 120 feet and its depth has become so shallow as to render navigation almost impracticable.

The surface of the flats or intervals is about 6 inches above the plane of low-water; these are covered with a heavy growth of marine plants, and in some cases with young willows. On an examination of the flats the strata of deposit is found to vary in depth these are covered with a heavy growth of marine plants, and, in some cases, with young from 10 to 20 feet, and their nature as well as that affecting the water-way is as follows: In the basin, sand, clay, gravel, and mud; below the basin to the railroad embankment, silt, sand, gravel, and mud, with a small percentage of saw-mill *débris*; below the railroad embankment, saw-mill *débris* and silt. The manufacture of lumber in this stream, was, as I am informed, commenced in 1756, a saw-mill having been erected on the falls in that year by the French, the second by the English in 1763, and a flouring mill in 1772. From 1771 up to the present time there have been not less than two, and at times sixteen, saw-mills in operation, constantly washing their *débris* into the stream. This, together with the material washed down from the slopes of the surrounding hills for more than a century, has resulted in nearly destroying its navigation. Up to 1836 sail crafts and steamboats could reach the foot of the falls; since that date, however, by the gradual growth of shoals vessels have been obliged, from time to time, to relinquish a higher for a lower landing place in the river, until the last steamer plying between Ticonderoga and Whitehall for freight and passengers ceased running with the season of 1878. At present vessels partly laden go up to the Cassey Dock.

In the spring of the year, when Lake Champlain is at its maximum, and the river thereby swollen, boats with full cargo can reach the foot of the falls. The freight business of Ticonderoga is, consequently, carried on by railroad transportation through "Addison Junction station," on the New York and Canada Railroad, 2 miles east of the village; the latter is then reached by a clay road over an elevation of 150 feet. Occasionally special freights are brought over the Lake George branch into the village. This branch was built for the transportation of passengers during the months of summer travel; it has a grade of 150 feet in the first mile and 100 in the second, and extends from "Port Marshall," on Lake Champlain, to "Baldwin," on Lake George, 5 miles distant. Ticonderoga is a manufacturing, mining, and milling village, of about 3,000 inhabitants. Its principal manufactories are as follows: Two woolen mills, two cotton mills, three pulp mills, two flouring mills, two saw-mills, one graphite mill, key mill, machine shop and foundry, and an iron forge.

The mining is of iron ore at a locality west of the village and about 5 miles distant; emery, about half a mile southeasterly; graphite, used by Dixon & Co. for pencils and crucibles, about 4 miles west, and at Hagen, 8 miles south of the village. Its importance will be best shown by the certified statement herewith transmitted of the business done in 1879. This statement was furnished by three of its leading men; a summary of which gives 37,586 tonnage, and $1,156,223 as the money value of its business for the year. From the above facts it will be seen that the village is already a thriving place, but almost entirely dependent upon a railroad, whose station is 2 miles distant from the village, for the transportation of its raw material and manufactured wares; this is attended with much expense and inconvenience. In view of the foregoing facts it is proposed to give to the business interests centered here the additional facilities of water transportation, which its importance would seem to require, by making the following improvements to the navigation of the river.

In the first place to dredge a channel 100 feet in width and to a depth of 8 feet at mean low-water, the depth required for vessels engaged in the commerce of Lake Champlain, from the 8-foot curve at the outlet to the railroad bridge, as indicated by the dotted line on the chart. In the second place to dredge the channel 60 feet wide and 8 feet deep from the railroad bridge to the foot of the falls. Afterwards in front of Cassey and Bishop docks, and from the pulp mill extending 400 feet northwardly along the right shore of the basin, to widen this channel to 100 feet; then from the 60-foot channel extend another cut 100 feet wide diagonally across the basin to the north end of the old dock, at the iron forge; and thence parallel to the face of the dock for 200 feet and 100 feet in width, as shown by the dotted lines in the chart. The river thus improved would, I think, meet all the present requirements of commerce; and the improvement of the basin could be enlarged from time to time as the development of business may demand. The cut from the railroad bridge to the 8-foot curve will probably need revetting to prevent its refilling. For this purpose a line of piling is proposed for each side of the cut, the two lines 100 feet apart; the piles of each line to be driven close to each other, and connected at top by waling timbers bolted to them.

ESTIMATED COST OF THE FOREGOING IMPROVEMENTS.

For dredging 32,592 cubic yards of saw-mill *debris* and silt, at the outlet, at 18c. per cubic yard	$5,866 56
Dredging 85,697 cubic yards of material in the channel and basin, from the drawbridge to the foot of the falls, at 25c	21,424 15
For 3,520 piles, 27 feet long, at $1.35 each	4,752 00
Driving 3,520 piles, at $1 each	3,520 00
Waling timbers 6 by 12 inches, 26,400 feet, board measure, including sawing and labor, at $20 per M	528 00
3,520 ¾-inch bolts, 15 inches long, at 25c. each	880 00
Contingent	5,545 29
	42,516 00

Ticonderoga village is in the collection district of Champlain; nearest port of entry, Burlington, Vermont; nearest light-house, Crown Point; and the nearest fort, Fort Montgomery, at the outlet of Lake Champlain.

Very respectfully, your obedient servant,

D. WHITE,
Assistant Engineer.

Lieut. Col. N. MICHLER,
Corps of Engineers, Bvt. Brigadier-General, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. No. 46.

CALCASIEU RIVER, LOUISIANA.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Report of survey of the Calcasieu River, Louisiana.

JANUARY 18, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 17, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers dated the 15th instant, and accompanying copy of report from Maj. C. W. Howell, Corps of Engineers, upon an examination of the Calcasieu River, Louisiana, made in compliance with the provisions of the river and harbor act of June 14, 1880.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS, U. S. A.,
Washington, D. C., January 15, 1881.

SIR: To comply with provisions of the river and harbor act of June 14, 1880, I have the honor to submit herewith a copy of a report to this office from Maj. C. W. Howell, Corps of Engineers, of the results of an examination of Calcasieu River, Louisiana, made under his direction with the view to improvement.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

EXAMINATION OF CALCASIEU RIVER, LOUISIANA.

UNITED STATES ENGINEER OFFICE,
New Orleans, January 10, 1881.

GENERAL: I have the honor to submit herewith the report of Assistant Engineer A. C. Bell upon a recent examination of the Calcasieu River, in Louisiana, which examination was provided for by act of Congress approved June 14, 1880, and under date of June 17, 1880, assigned by the Chief of Engineers, U. S. A., to this office for execution.

As Mr. Bell was not connected with the preliminary work of the examination, a statement of that portion is given as follows, viz:

On September 3, 1880, Mr. Justin Straszer was ordered to proceed to Lake Charles, for the purpose of collecting all available information relative to the work, and to see what arrangements could be made for having a quarter-boat built. Having returned, and made his report, he was again ordered, on September 13, to proceed to Lake Charles and superintend the construction and fitting out of the quarter-boat for his party, preparatory to commencing the work of the examination; work on the boat was commenced September 15, and Mr. Straszer reported on September 29 that she was ready for work, and that he had completed the examination of the shore line of Lake Charles.

The cost of the boat and skiffs was $285. The boat was then taken up Calcasieu River to a point 8 miles below Phillip's Bluff—the initial point of the examination—being poled part of the way and towed the remainder. At this point Mr Straszer, owing to illness, was compelled to leave the boat, and returned to New Orleans, arriving here October 30. The unfortunate condition of Assistant Straszer, as stated above, caused considerable delay and extra expense, and prevented a reconnaissance of the river for some distance above Phillip's Bluff, as provided for in project; but enough information was obtained to indicate, that no improvement above Phillip's Bluff, is at present desirable, even if improvement could be made at reasonable expense.

I am satisfied that it could not be so made, as that part of the river is said to be a very rapid, shallow stream, with many timber obstructions, and only suited for running saw-logs during the short periods of flood.

The examination was conducted in the usual manner, as heretofore reported for similar works, viz, by running a transit-line meandering the river, measuring distance by use of stadia rods, taking frequent soundings, locating obstructions and ascertaining their character, noting the general topographical features, &c., the small party employed being comfortably provided for on a flat-boat, which was floated downstream as the examination progressed.

It will be noted, from Assistant Bell's report, that at the time of examination the "head of navigation" was found 28 miles below Phillip's Bluff, and that the examination was only carried to the upper end of Lake Charles and to cover a small portion of the lake beyond its entrance. This is in strict accordance with the wording given in the river and harbor act providing for the examination.

Mr. Bell states that he did not find a less depth at the mouth than is said to be available through the lake, viz, 8 feet.

Since the examination was completed, I have learned that it was probably intended to have the work extended through Lake Charles and Calcasieu Pass to the Gulf of Mexico; but if it had been so stated in the river and harbor act, I should probably have submitted as my project a statement that I considered such extension unnecessary, in

view of information on hand dating back to 1871 and 1874, which it is thought is sufficient guide, when taken in connection with statements of the filling of dredged channel of 1874 at head of Calcasieu Pass, for estimates to-day, without making re-examination, on which to base the latter.

So, in submitting recommendation, in addition to report of recent examination, I beg leave to refer to my reports of 1871, 1873, and 1874, to be found in the annual reports of the Chief of Engineers for those years, and will assume the dredged channel of 1874, at head of Calcasieu Pass, as completely obliterated, so as to restore normal condition at the head of the pass, also condition of Gulf Bar, as reported in 1871.

RECOMMENDATION.

It is first recommended that the river be improved, from Phillip's Bluff to its debouche at the head of Lake Charles, by the removal of obstructions noted in the report of Mr. Bell.

The estimate for such removal, as submitted by Mr. Bell, is made in accordance with estimates for similar works, and is considered sufficient. In the second place, I beg leave to renew my recommendation of 1871, also my estimate for a channel between the lake and the pass, as given in that report; also my statement of importance of the work, and in addition will say that I consider this latter the most important part of the work recommended. In the third place, I would suggest that, if appropriation be made for the work recommended, it be made under two headings, viz:

1. For dredging at head of Calcasieu Pass $15,000
2. For improvement of Calcasieu River, Louisiana, from Phillip's Bluff to its mouth 10,080

I think this division very desirable in view of the possibility that the whole estimate may not be appropriated, and, in consequence, the decision of relative importance thrown entirely upon the Executive.

Total estimate, $25,080.

The commercial importance of the work is indicated in Mr. Bell's report, and in previous reports herein referred to.

The nearest light-house is at the entrance to Calcasieu Pass.
The work is located in the collection district of Galveston, Tex.

Chart of examination will be forwarded as soon as tracing can be made for retention in this office.

Very respectfully, your obedient servant,

C. W. HOWELL,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

NOTE.—In reply to telegraphic inquiry, addressed to a well-informed business man of Lake Charles City, a gentleman largely interested in the lumber trade of that region, and known to be well informed, I have received the following telegram since closing report, viz:

Present depth of water in Calcasieu Channel from 4 to 5 feet.
Depth desired for vessels, from 7 to 8 feet.

O. T. SCHINDLER.

This information supports my conclusion as to filling of channel at head of Calcasieu Pass, justifies estimation for reopening channel based on assumption of entire refilling; at the same time it shows that the

channel has not *entirely* refilled, also that the demand for depth has increased.

That the channel has not entirely refilled after six years of neglect is considered favorable to a proposition for redredging it.

C. W. HOWELL.

REPORT OF MR. A. C. BELL, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
New Orleans, January 4, 1881.

MAJOR: I have the honor to submit the following report of examination of Calcasieu River. Owing to the sickness of Capt. J. Straszer, I received instructions on the 4th of November, 1880, to complete the work already commenced by him. I found quarter-boat and party about 8 miles below the initial point of the examination, which was at Phillip's Bluff, 56 miles above Lake Charles, the lower limit of the work. For convenience of description I divide the river in two sections with reference to the cost and difficulty of improving the same.

FIRST SECTION

Comprises the distance from Phillip's Bluff to the end of the 28th mile, which is now the head of navigation.

The river meanders through a low gum swamp, about 1 mile in width, which is subject to overflow at high-water; said swamp is terminated on either side by high piney woods, not subject to overflow.

In the first 8 miles there are three cut-offs to be closed, which can be easily accomplished by floating into them the snags and leaning trees removed from the main river; 119 snags and 319 leaning trees to be removed. I would recommend using Wood's Lower Cut-off, which leaves the river at the 8th mile as the channel; the main river being much obstructed by sunken saw-logs, and a sand bar extending the entire width of the river. Fully one-half the volume of water in the river passes through this cut-off; the distance would be shortened but little by the new route.

In the next 12 miles, 197 snags and 470 leaning trees are to be removed. At the end of the 20th mile the river contracts to a width of 95 feet; it retains this width for a distance of 1¼ miles. This portion of the river is known as the narrows; the banks are bluff, composed of sand and clay; the current attains an average velocity of 3 miles an hour at ordinary stage of water; 41 snags and 63 leaning trees to be removed; least depth of water 7 feet.

At the end of the 27th mile there is a very bad bar; at low-water there is scant 6 inches of water on it. The bar is 100 feet in width by 600 feet in length; there is a channel on the east 15 feet wide and 7 feet deep. This bar has been formed by the accumulation of snags below the head of Stackpole Cut-off; if the snags were removed and the cut-off closed the accelerated current of the river would soon carry away the sand deposit.

The next 7 miles require the removal of 95 snags and 203 leaning trees. The difference between high and low water in this section of river is about 8 feet; average rate of current 2 miles per hour.

Boats have run up this section as high as Grey's Landing, 16 miles below Phillip's Bluff.

The cost of removing these obstructions would be $200 per mile, making a total for the 28 miles of $5,600.

SECTION SECOND

Includes from the 28th mile to the entrance of the river into Lake Charles, 28 miles below. This section of river meanders through a swamp similar to the upper, but is separated from it by banks about 12 feet wide and from 3 to 4 feet in height, thus forming natural levees. A number of large bays border the banks of the lower river, having an average depth of 20 feet. In the next 19 miles the river is widened and deepened, and the volume of water greatly increased by the junction of three large bayous; 97 snags and 101 leaning trees are to be removed. At the 48th mile occurs the junction of the West Fork; here the river widens abruptly to 500 feet and a depth of 30 feet, which it retains to the mouth. In the remaining 9 miles 24 snags and 34 leaning trees are to be removed.

I found no bar at the mouth, the least depth being much greater than that of Lake Charles, which is 8 feet. The whole of this section is affected by tide-water, the rise and fall being about 2 feet.

The amount required is estimated at $100 per mile, making a total for the 28 miles of $2,800.

RECAPITULATION.

First section, 28 miles, at $200 per mile	$5,600
Second section, 28 miles, at $100 per mile	2,800
Add 20 per cent. for contingencies	1,680
Total	10,080

A chart plotted on a scale of 1 to 5,000 accompanies this report, on which all obstructions are noted, and the depth in feet given, at intervals along the entire length of the river.

The commerce to be benefited consists of 2,000 bales of cotton, which now takes the overland route to the railroad. I have no doubt that were the river made navigable a number of rice farms would be located, as large areas of marsh are to be found on the edge of the piney woods. Rafting and floating logs to market is the principal business carried on in the upper river; 18,000 saw-logs were floated down the river in the past year. Seven saw-mills are located near the mouth of the river; each will cut on an average 400,000 feet of lumber per month, making a total for the seven mills of 2,800,000 feet per month. The greater part of this lumber is shipped by schooner to Galveston, to supply the Texas market.

The following report of tonnage and crew entering the river has been kindly furnished by the deputy collector of Calcasieu Pass:

Months.	Crew.	Tons.
July, 1879	131	2,968.64
August, 1879	85	908.00
September, 1879	43	1,411.34
October, 1879	72	2,098.78
November, 1879	63	1,455.11
December, 1879	91	1,841.06
Total	485	10,682.93

Very respectfully,

A. C. BELL,
Assistant Engineer.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 48.

HEMPSTEAD HARBOR AND GOWANUS BAY, NEW YORK.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

A report of the Chief of Engineers relative to the surveys of Hempstead Harbor, Long Island, and Gowanus Bay, New York.

JANUARY 21, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 20, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers dated the 17th instant, and accompanying copies of reports from Col. John Newton, Corps of Engineers, upon examinations and surveys of Hempstead Harbor, Long Island, and Gowanus Bay, New York, made in compliance with the provisions of the river and harbor act of June 14, 1880.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 17, 1881.

SIR: To comply with requirements of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Col. John Newton, Corps of Engineers, of the results of examinations and surveys made, under his direction, of Hempstead Harbor, Long Island, and Gowanus Bay, New York, with the view to their improvement.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY OF GOWANUS BAY, NEW YORK.

UNITED STATES ENGINEER OFFICE,
New York, January 11, 1881.

GENERAL: I have respectfully to forward a report on the survey of Gowanus Bay, as provided in the river and harbor act approved June 14, 1880.

The commerce to be benefited and the depth of channel needed for the wants of commerce are explained in Exhibits A, B, and C, sent herewith.

The chart sent herewith exhibits in red lines the exterior pier and bulkhead lines as defined by authority of the State of New York, which fix within a narrow margin the position of the channel to be dredged or improved.

The estimate for a depth of 18 feet at mean low-water is $183,000. The channel so dredged will not be permanent, and it is feared will not for many years receive any assistance in retaining its depth from the contraction caused by the construction of the piers to the legal limit.

Gowanus Bay is in the collection district of New York.

New York is the nearest port of entry. The nearest light-house is Robbin's Reef Light, and the nearest fort is Fort Columbus.

The amount of revenue collected at the port of New York during the past fiscal year is $131,812,349.89.

The amount of commerce and navigation to be benefited by the proposed improvement, as estimated by parties engaged in business in the locality, is about $5,000,000.

The total amount of tonnage for the past fiscal year, as furnished by the same parties, is 398,905 tons.

The survey was made during the past season by the party under the charge of Mr. Matthew Cox, assistant engineer, under instructions from this office.

Respectfully submitted.

JOHN NEWTON,
Colonel of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. R. H. TALCOTT, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
New York, January 10, 1881.

GENERAL: I have the honor to submit the following report on the survey of Gowanus Bay, New York, together with such information in regard to the commerce and navigation of the same as I have been able to obtain.

The accompanying chart shows the results of the late survey, and the works of improvement completed and in progress, and also the proposed dredging. An estimate of the probable cost of the latter is appended hereto.

Gowanus Bay is in the collection district of New York.

New York City is the nearest port of entry. The nearest light-house is Robbin's Reef Light, and the nearest fort is Castle William, on Governor's Island.

The amount of revenue collected at the port of New York during the past fiscal year is $131,812,349.89.

The amount of commerce and navigation to be benefited by the proposed improvement, as estimated by the parties engaged in business in this locality, is about $5,000,000.

The total amount of tonnage for the past fiscal year, as furnished by the same parties, is 398,905 tons.

Extensive improvements are in progress in Gowanus Bay, especially on the northerly shore, where a large basin is in progress of construction and several slips are proposed,

which, when finished, will give great facilities for the loading and discharging of vessels. These improvements are shown on the chart in full lines where the dock-front is completed, and in broken lines where only proposed.

In 1875 a commission, appointed by the legislature of the State, established pier and bulkhead lines in Gowanus Bay. These lines do not correspond with the exterior lines of the improvements on the northerly side of the bay, along which the present channel runs, except in the upper part, but they limit the space in which the new channel must be dredged. These lines are shown in red on the accompanying chart.

The improvement proposed is to dredge a channel from the 18-foot contour outside the bay to the drawbridge for Hamilton avenue. This channel is estimated at 18 feet deep at mean low-water and 200 feet wide, except the last few hundred feet near the drawbridge, where it will gradually narrow down to 100 feet.

The survey was made during the latter part of October and 1st of November by the party under the charge of Mr. Matthew Cox, assistant engineer, under instructions from this office.

The plane of mean low-water to which all the soundings were reduced was obtained by a line of levels from the United States coast and Geodetic Survey bench-mark on the Atlantic stores to the tide-staff in Gowanus Bay.

ESTIMATES.

530,000 cubic yards of dredging, at 30 cents	$159,000 00
Engineering and contingencies	23,850 00
	182,850 00

All of which is respectfully submitted by your obedient servant,

R. H. TALCOTT.

Col. JOHN NEWTON,
Corps of Engineers, U. S. A.

A.

LETTER OF MESSRS. DOWNING & LAWRENCE.

BROOKLYN, *November* 29, 1880.

DEAR SIR: In reply to yours of 19th instant, we nave to say that Gowanus Bay Channel should have from 15 to 18 feet water at ordinary low-water.

During the year 1880, from January to November 29, the following mentioned vessels have been up this channel, and very much annoyance has been occasioned by the shallowness of water:

	Tons.
5 ocean steamers, aggregate tonnage	4,194
50 ships, aggregate tonnage	59,861
498 barks, aggregate tonnage	287,127
65 brigs, aggregate tonage	19,994
Total tonnage deep-water vessels	370,176
In addition to above, 198 schooners	27,729
Making grand total of registered tonnage	398,905

besides an immense traffic in oil, lumber, bricks, iron ore, &c. The above figures can be verified by reference to custom-house records. When this channel is deepened, very many more large vessels will make use of it. We think that during the year 1879 there were quite as many vessels in this district as in 1880. If we can be of any further service to you in this or any other cause please command us.

Yours truly,

DOWNING & LAWRENCE.

General JOHN NEWTON, *U. S. A.*

B.

Names of parties doing business on and adjacent to the Gowanus Canal in the city of Brooklyn, N. Y., and statement of amounts in value, quantities, and style of business, for one year ending December 1, 1880.

Names.	Kind of merchandise.	Quantity.	Value.
Kenyon & Newton	Lumber and timber	5,000,000 feet	$150,000
Watson & Pattinger	do	6,000,000 feet	160,000
Kelseys & Loughlin	Coal and wood	50,000 tons	250,000
H. W. Jones & Co	do	About 8,000 tons	40,000
Hobby & Leeds	Lumber, bricks, &c.	73,000 tons	180,000
J. Pieper's Sons	Wood		31,500
S. W. Browne & Co	Hay and grain	27,000 tons	660,000
Nelson & Holden	Coal and wood		265,000
P. G. Hughes	Masons' materials		150,000
John Link	Coal and wood	6,000 tons	40,000
J. T. Story	Coal	30,000 tons	150,000
G. Ross & Sons	Lumber and timber	4,000,000 feet	125,000
Halstead Brothers	do	1,000,000 feet, 6 mos.	50,000
A. W. Adams	Masons' materials		75,000
J. S. Loomis	Lumber, moldings, &c	4,500,000 feet	125,000
William Bradley	Freestone	3,000 tons	48,000
Edward C. Pease	Lumber and mill	1,000,000 feet	75,000
J. Morton & Sons	Masons' materials	400 vessels of 150 tons	250,000
Brooklyn Improvement Company	Lumber and material	10,000,000 feet	500,000
South Brooklyn Saw-Mill Company	Timber	6,250,000 feet	250,000
J. T. E. Litchfield & Co	Lumber and timber	4,000,000 feet	100,000
Weber & Quinn	Coal and wood	45,000 tons	125,000
Cary & Evans	Hay and grain	45,000 tons	90,000
P. H. Quinn	Coal and wood	10,000 tons	50,000
J. T. Schmadecker	do	40,000 tons	160,000
Murtha & Boyle	do	50,000 tons	250,000
Knight & Lidford	do	18,000 tons	90,000
H. S. Christian	Masons' materials		175,000
Rankin & Ross	Freestone	2,500 tons	45,000
George F. Gregory	Petroleum oil	100,000 barrels	600,000
H. J. Baker & Brother	Chemicals and fertilizers		75,000
			5,274,500

Vessels recorded in custom-house arriving in Gowanus Bay Channel for eleven months, January 1 *to December* 1, 1880.

5 steamers, aggregate	4,194	tons, average	839 tons.
50 ships, aggregate	59,861	tons, average	1,197 tons.
498 barks, aggregate	287,127	tons, average	576 tons.
65 brigs, aggregate	19,994	tons, average	307 tons.
198 schooners, aggregate	27,729	tons, average	140 tons.
	398,905		

(Received from Mr. Jeremiah P. Robinson.)

C.

LETTER OF THE PRESIDENT OF BUSH AND DENSLOW MANUFACTURING COMPANY.

NEW YORK, *November* 20, 1880.

DEAR SIR: Your esteemed favor of the 19th instant at hand and contents noted. In answer we would state that the depth of water required by the parties up the creek, which we understand to be 21 feet at low-tide, would be sufficient for most of the vessels coming to our docks and to those of our neighbors.

The largest vessels afloat are employed in carrying petroleum, but we could scarcely ask for more water than is required in the general shipping business. We will gladly hold ourselves ready to give you any additional information or assistance within our reach.

Yours, very respectfully,

BUSH AND DENSLOW MANUFACTURING COMPANY,
By R. T. BUSH,
President.

Mr. R. H. TALCOTT,
Assistant Engineer.

SURVEY AND EXAMINATION OF HEMPSTEAD HARBOR, LONG ISLAND, NEW YORK.

UNITED STATES ENGINEER OFFICE,
New York, December 29, 1880.

GENERAL: I have the honor to report upon the survey and examination of Hempstead Harbor, Long Island, New York, as provided for in the river and harbor act approved June 14, 1880.

The survey was made by the party of Mr. C. G. Weir, assistant engineer, under the general supervision of Mr. R. H. Talcott, assistant engineer, to whom was indicated from this office the essential points to be examined.

From information collected from parties interested, the proposed improvement will be principally in the inner bay, which, but for a narrow channel of communication, would be entirely separated from the outer bay by a low level of sand beach extending from the west shore and called "Bar Beach."

I respectfully refer to Appendices A and B as enumerating the wants of the locality and the benefits to be derived from improving the navigable depth. The chart and Mr. Talcott's report are also transmitted, the latter discussing various possible modes of improvement, and prepared in this office after full consultation with me and under my supervision.

The method of improvement by separating the inner from the outer bay by a dam, and regulating ingress and egress by means of a lock, I cannot recommend. A beautiful sheet of water in front of the villas adorning the east shore and sufficiently deep for commercial purposes to the head of the bay would be formed. There are many serious objections to this plan. It would be costly as well as not necessary for the purposes of trade. Large accumulations of drift sand would continually shoal up the entrance to the lock and require frequent removals, and finally vessels could not use the lock during a storm from the north to northwest or seek a needed shelter in the inner bay. Approximate estimated cost, $440,000.

The second method would be to construct a dike from the "Bar Beach," in a general southerly direction, reaching nearly as far up as Hicks' Wharf.

This dike, 7,500 feet long, with 1,700 feet of half-dike, and the requisite dredging, would obtain and maintain a channel of 8 feet in depth at mean low-water as far up as half-way between the steamboat dock and Hicks' Dock.

The remainder of the channel dug to the southern extremity of the bay, and 4 feet deep at mean low-water, would probably require renewed dredging from time to time to keep it open.

ESTIMATE.

7,500 feet of dike, at $10	$75,000
1,700 feet half dike, shore protection, at $5	8,500
95,000 cubic yards of dredging, at 30 cents	28,500
From steamboat dock to head of bay, 100,000 cubic yards of dredging, at 30 cents	30,000
Engineering and contingencies	21,200
	163,200

This method of forming a tidal basin by means of a dike, and generating a constant scour through a long reach of the channel, is undoubtedly the most feasible means of improvement, but, as in some other

localities, it will be objected to upon esthetic principles, as marring the picturesque appearance of an uninterrupted sheet of water, and as offering, besides, an impediment to the free tacking of small sail-boats.

It is always difficult and generally impossible to reconcile the conditions of beauty with those of the interests of navigation, and it is not perceived how diking in one form or other could be entirely dispensed with except by the alternative construction of a costly dam and lock.

The long dike may be terminated at "A," the 8-foot channel at the steamboat dock, and an excavation 4 feet deep extending thence to the town dock, at a total estimated cost of $94,300.

The 4-foot channel would require dredging from time to time.

The Glen Cove landing in the lower bay is difficult of approach at low-water on account of a shoal there. As this is a permanent and natural shoal, which will return if removed by dredging, the proper remedy would appear to be for the proprietors to extend their dock into deeper water.

Hempstead Harbor is in the collection district of New York.

New York is the nearest port of entry. The nearest light-houses are Sands' Point light and Execution Rocks light, on Long Island Sound.

The amount of revenue collected at New York during the past fiscal year is $131,812,349.89.

The amount of commerce and navigation to be benefited by the proposed improvement is estimated (by those interested) at about $475,500, and the amount of tonnage for the past year, on the same authority, at 28,500 tons.

Respectfully submitted.

JOHN NEWTON,
Colonel of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. R. H. TALCOTT, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
New York City, December 27, 1880.

GENERAL: I have the honor to submit the following report of the survey of Hempstead Harbor, New York, together with such information in regard to the commerce and navigation of the same as I have been able to obtain.

The accompanying chart shows the present condition of the channel in the inner harbor and its connection with deeper water in the outer harbor as developed by the recent survey, and also the works proposed for the improvement. An estimate of the probable cost of carrying out either of three proposed plans is hereto appended.

Hempstead Harbor is in the collection district of New York.

New York City is the nearest port of entry. The nearest light-houses are Sand's Point Light and Execution Rocks Light, on Long Island Sound.

The amount of revenue collected at New York City during the past fiscal year is $131,812,349.89.

The amount of commerce and navigation to be benefited by the proposed improvement, as estimated by those interested, is said to be about $475,000.

The amount of tonnage for the past year is reported to be about 28,500 tons.

Hempstead Harbor lies on the north side of Long Island, about 8 miles east of Fort Schuyler, on Throgg's Neck. The bay is divided into two parts by a narrow neck of low sand beach called "Bar Beach," which runs out from the western shore nearly at right angles to the same and extends about ¾ of the way across. The outer harbor has a good deep channel, but the inner harbor is very shoal, and the channel is very crooked. The upper part of the inner harbor is entirely bare sometime before low-water, even in ordinary tides.

The village of Roslyn lies at the head of the inner harbor, and is the port from which quite a number of towns in the interior, such as Hempstead, Garden City, &c., draw

their supplies of coal, lumber, bricks, and heavy merchandise. It has several manufactories, and a large trade in the products of the adjoining farms.

The present reliable means of communication with market in New York City is by railroad and one steamboat which makes a round trip daily between Roslyn and New York City. All heavy material brought in deep-draught vessels has now to be lightered from the outer harbor at a great increase in cost of transportation, and frequently heavy demurrage owing to high winds preventing the lighter from being used.

The inner harbor would also be used as a harbor of refuge for vessels engaged in transporting freights to the landings in the outer harbor in case of heavy storms, but these are now prevented from getting the benefit of a safe anchorage unless they are of very light draught.

The ground rises quickly from the shores of the bay, and in some places the bluffs come to high-water mark. As these bluffs are sandy, when there is a high wind, or when a steamboat passes, the waves undermine them and bring the sand into the channel. One of the worst places of this sort is just south of the entrance into the inner harbor. Here the currents are very strong and the channel close in shore, so that the steamboat waves have a direct action on the bluff. The sand brought into the channel at this point is, on a flood-tide, carried up the harbor, where it is deposited by the slackening currents and forms bad bars.

In studying the chart for the purpose of designing a permanent improvement, the method by dikes and dredging is the one suggested as the best and cheapest, but owing to the dikes being unsightly at low-water, it has been suggested, by those having country residences in the vicinity, that a dam could be constructed across the present entrance and a lock used for ingress and egress, the water in the inner harbor being maintained at or near its present high-water level. This method, though a very expensive one and entailing a constant outlay in repairs and attendance, has been considered, and a rough estimate of its probable cost is submitted.

There being no other data as to the foundation obtainable, no borings having been made, the cost of that item has been assumed and the cost of the lock has been obtained from estimates of similar structures on the Mississippi and Kanawha rivers, without going into the details.

The second method of improvement, which is to dredge a channel and to build a dike to maintain it, would necessitate the widening of the present channel for some distance from the entrance into the inner harbor, and the dredging of a new channel through the shoals. From the entrance to the steamboat dock at Roslyn this channel is estimated as 200 feet wide and 8 feet deep at mean low-water and thence to the wharves in the creek at the head of the harbor, as 100 feet wide and 4 feet deep at mean low-water. The diking proposed would start from the southerly side of Bar Beach and extend about 7,500 feet up and about parallel to and 800 feet from the easterly shore. This dike would form a tidal basin of the portion of the bay west of it, and give sufficient velocity to the currents in the channel to keep it scoured out to the required depth.

The third method is to dredge the present channel to a uniform depth of 8 feet at mean low-water and 150 feet wide.

Where the channel curves to the right and now shows such a tendency to shoal, two dikes would be required, one on the easterly side of the channel, following its present direction, and the second on the westerly side, overlapping the first and curving to the left.

In the event of the adoption of either of the two last-mentioned plans of improvement the protection of the shore near the entrance to the inner harbor will be necessary. This will require 1,700 feet of half dike.

The dikes required are estimated to be built of carbolized timber and according to the general plan now in use.

The survey was made during the past season by the party under the charge of Mr. C. G. Weir, assistant engineer, under instructions from this office.

The plane of mean low-water to which the soundings have been reduced, was established by tidal observations at the Glenwood dock at the entrance to the inner harbor, and at the Roslyn steamboat dock. The results of the reduction of these observations are shown in tabular form on the accompanying chart.

Respectfully submitted.

R. H. TALCOTT,
Assistant Engineer.

Col. JOHN NEWTON,
Corps of Engineers, U. S. A.

ESTIMATE.

First method.

1 lock 250 feet long, 60 feet wide, including gates, foundation, &c.	$300,000	
1 dam	82,000	
		$382,000
Engineering and contingencies		57,300
		439,300

Second method.

From entrance to steamboat dock, 7,500 linear feet of dike, at $10	75,000	
1,700 linear feet, half dike, at $5	8,500	
95,000 cubic yards dredging, at 30 cents	28,500	
		112,000
From steamboat dock to creek, 100,000 cubic yards dredging, at 30 cents		30,000
Engineering and contingencies		21,300
		163,300

Third method.

From entrance to steamboat dock, 2,500 linear feet of dike, at $10	25,000	
1,700 linear feet, of half dike, at $5	8,500	
30,000 cubic yards of dredging, at 30 cents	9,000	
		42,500
From steamboat dock to creek, 100,000 cubic yards of dredging, at 30 cents		30,000
Engineering and contingencies		10,875
		83,375

R. H. TALCOTT,
Assistant Engineer.

A.

INFORMATION RECEIVED FROM GLEN COVE STEAMBOAT COMPANY.

The improvement will directly benefit the people of Roslyn, Port Washington, Westbury, Wheatly, Mineola, Manhasset, Searington, Garden City, Jericho, Hempstead, Hyde Park, Glenwood, as it is the nearest water communication to these places; they both get their manure and fertilizers for the land, general merchandise, building material, and coal, sell what they produce on the land, and their forest products. The harbor is the most inland of any on the island, it thus has more surrounding country. The water communication on the south side is expensive and difficult. The population in these places to be benefited is at least 20,000. The assessed valuation of the town of North Hempstead, containing 31,520 acres, is $4,192,000. You will thus see that the section is both populous and wealthy.

Value of commerce entering the harbor:

Fertilizers	$25,000	
Coal, lumber, and builders' material	100,000	
General merchandise	150,000	
		$275,000
Going out the harbor:		
Hay and grain	50,000	
Market produce	150,000	
		200,000
		475,000

Will benefit commerce as follows:

At present in the upper part of the harbor there is no water at low tide, and when northerly winds blow and the moon is not in favorable quarter, navigation is suspended, and demurrage and waiting causes all produce an extra expense. Many farmers, in consequence of the cheapness of western produce, find that farming does not pay; market gardening would pay them if the water was deepened enough to allow steam vessels to get to the docks and take their produce to the market cheaply; consequently large quantities of land and capital are idle. It will benefit all persons

living in the above-named places, cheapen what they consume, and lessen expense on what they sell.

The tonnage entering the harbor is as follows yearly, as near as can be ascertained: 10 to 12 schooners, with tonnage of 2,500 tons, from the State of Maine, Province of New Brunswick, and the Southern States unload lumber and shingles, and this has to be lightered from the lower bay.

During heavy blows lightering is about impossible, as the bottom is so soft that pushing lighters with poles is not possible with head or cross winds. Sometimes 600 to 700 tons lie waiting to be discharged for this cause—25 to 30 canal boats and barges with a tonnage of 5,000 to 6,000 tons; 200 smaller schooners and sloops, with 20,000 tons; a total of 28,500 tons.

The delivery of market produce in the vicinity of the named places costs the producer to get to market, per load of 1½ tons, an average of $9, at $6 per ton, and these loads are of a gross value of $.

The same can be transported by steam vessels getting near head of harbor, and having water deep enough to leave at reliable hours, for $1.50 per ton, saving on each load of over $6, at $4 per ton, and delivering it in the city in better condition; it will also enable many small farmers to sell produce who do not have teams and trucks to go to market by land.

During the past ten years the town of Hempstead has doubled in size, and most of the material has entered Hempstead Harbor.

Garden City, where from $4,000,000 to $5,000,000 have been expended, and $4,000,000 are now being spent, the material for which has largely entered Hempstead Harbor. Manufacturing enterprises are in progress to some extent, and with good water communication will rapidly increase.

B.

LETTER OF MR. WRIGHT DURYEA.

NEW YORK, *August* 17, 1880.

DEAR SIR: I am gratified with learning that at last session of Congress an appropriation was made to defray the expense of a survey, which, by the same act, was ordered to be made of Hempstead Harbor, having in view an improvement of said harbor, for which further appropriation will be required.

I have long deemed it strange that, while appropriations from session to session were being made for the improvement of truly insignificant so-called bays or harbors, there should be no interest taken in the much-needed improvement of several parts of Hempstead Harbor, particularly so much thereof as lies "above" or south of what is known as "Barrow" Beach.

This entire harbor is, to all who navigate Long Island Sound, well known to be, on occasions of great storms, a most important haven, and, as such, is frequently and largely resorted to by sound-plying craft, both sailing vessels and steamers. Not only so, there is a large local tonnage, all of which vessels are restricted in their carrying capacity, by reason of the natural shallowness of the water in several places in said harbor, especially south of said bar. The total tonnage employed by my company in regular operations by way of said harbor is about 1,000, and constantly increasing with my company's increasing business; and while perhaps it may be said that our vessels, to reach our works, are not required to pass to the south of said "Barrow" Beach, it must be admitted that there are frequent occasions when by high wind they seek that southern part of the harbor for shelter. It must therefore be quite apparent that an improvement to the said southerly portion of the harbor would essentially be a benefit alike to all who carry on a traffic upon the waters of said harbor and those who seek them for the purposes of shelter. I need not, to you, allude to the large population and business enterprises already depending upon that water highway for prosecuting their business, and the probable prompt and large increase which would likely result from the improvements referred to, as you are too familiar with said harbor and the people and business about it to make special allusion to it necessary. The steamboat company of Glen Cove, to me, seem *particularly* interested south of "Barrow" Beach, as they make the south bay the end of their route. Anything you may do in furthering the public and much needed improvements will be duly appreciated by

Yours, truly,

WRIGHT DURYEA.

Hon. JAMES W. COVERT.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 49.

ICE-BREAKERS IN THE OHIO RIVER.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports in relation to ice-breakers in the Ohio River.

JANUARY 24, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 24, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, dated the 21st instant, and accompanying copies of reports from Maj. W. E. Merrill, Corps of Engineers, upon examinations and surveys made in compliance with the provisions of the river and harbor act of June 14, 1880, for the construction of two ice-breakers in the Ohio River near the West Virginia shore and below the railroad bridge at Parkersburg; for an ice-harbor at Bellaire, Ohio; for an ice-harbor at Point Pleasant, W. Va.; and of the Ohio River at head of Hurricane Island and Elizabethtown, Ill.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 21, 1881.

SIR: To comply with provisions of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Maj. W. E. Merrill, Corps of Engineers, of examinations and surveys made under his direction at the following localities, viz:

1. For the construction of two ice-breakers in the Ohio River near the West Virginia shore and below the railroad bridge at Parkersburg.

2. For an ice-harbor at Bellaire, Belmont County, Ohio.
3. For an ice-harbor at Point Pleasant, W. Va.
4. The Ohio River at head of Hurricane Island and Elizabethtown, Ill.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

EXAMINATION FOR THE CONSTRUCTION OF TWO ICE-BREAKERS IN THE OHIO RIVER, NEAR THE WEST VIRGINIA SHORE, AND BELOW THE RAILROAD BRIDGE CROSSING SAID RIVER AT PARKERSBURG.

UNITED STATES ENGINEER OFFICE,
Cincinnati, Ohio, December 11, 1880.

GENERAL: I have the honor to submit the following report on the examination or survey directed by the river and harbor act of June 14, 1880, and assigned to my charge by department letter of June 17, 1880, to wit:

For the construction of two ice-breakers in the Ohio River, near the West Virginia shore, and below the railroad bridge crossing said river at Parkersburg.

The river and harbor act of March 3, 1879, ordered the following survey:

Ohio River and mouth of Little Kanawha River, West Virginia, to ascertain the adaptability of that locality for an ice-harbor, including a report on the cost and merit of that point compared with the mouth of the Muskingum, at Marietta, Ohio, surveyed under the provisions of the act of June 18, 1878.

The survey and report thus ordered was made and forwarded to the Chief of Engineers, January 30, 1880, and was printed as Senate Ex. Doc. No. 83, Forty-sixth Congress, second session. This report fully covers all the ground named in the survey ordered by the present Congress, besides containing facts and estimates on the Little Kanawha River that are not embraced in the second order. There seems to be no reason for repeating so recent a survey, and I would therefore respectfully refer to the above mentioned report and accompanying map as containing all the information called for in the last river and harbor act. I estimated that the cost of these two ice-breakers would be $6,000; and I also stated that I considered that their construction would probably be a benefit to commerce during severe winters. I have thus far seen no reason to change or modify that opinion.

Respectfully submitted.

WM. E. MERRILL,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

[Senate Ex. Doc. No. 83, 46th Congress, 2d session.]

Letter from the Secretary of War, transmitting copy of report of Maj. William E. Merrill, Corps of Engineers, of survey of mouth of Little Kanawha River, with view to construction of an ice harbor at that point.

FEBRUARY 16, 1880.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, February 12, 1880.

The Secretary of War has the honor to transmit to the United States Senate a letter of the Chief of Engineers of the 10th instant, and accompanying copy of report from Maj. William E. Merrill, Corps of Engineers, of an examination made in compliance with the river and harbor act of March 3, 1879, of the mouth of Little Kanawha River, West Virginia, to ascertain the adaptability of that locality for an ice harbor, with a comparison of the cost and merit of that point with the mouth of the Muskingum at Marietta, Ohio.

ALEX. RAMSEY,
Secretary of War.

The PRESIDENT OF THE UNITED STATES SENATE.

OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D. C., February 10, 1880.

SIR: I have the honor to submit herewith, to comply with the requirements of the river and harbor act of March 3, 1879, a copy of a report to this office from Maj. William E. Merrill, Corps of Engineers, of the result of an examination of the mouth of Little Kanawha River, West Virginia, to ascertain the adaptability of that locality for an ice harbor on the Ohio River, with a comparison of the cost and merit of that point with the mouth of the Muskingum, at Marietta, Ohio.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

EXAMINATION AND SURVEY FOR ICE HARBOR AT MOUTH OF LITTLE KANAWHA RIVER, WEST VIRGINIA.

UNITED STATES ENGINEER OFFICE,
Cincinnati, Ohio, January 30, 1880.

GENERAL: The river and harbor act approved March 3, 1879, directed an examination and survey at the mouth of the Little Kanawha River, in order to ascertain the adaptability of that locality to an ice harbor. The clause ordering this survey reads as follows:

> Ohio River and mouth of Little Kanawha River, West Virginia: To ascertain the adaptability of that locality for an ice harbor, including a report on the cost and merit of that point compared with the mouth of the Muskingum at Marietta, Ohio, surveyed under the provisions of the act of June 18, 1878.

This survey and examination having been assigned to me, I have the honor to submit the following report:

The Little Kanawha River rises in Upshur County, West Virginia, very near the center of the State, and flows northwesterly until it joins the Ohio at Parkersburg.

The desire of the citizens of Parkersburg, at whose instance this survey has been ordered, is to utilize the mouth of the Little Kanawha as a harbor of refuge against ice in the Ohio. They assert that since the construction in 1868 of locks and dams on the Little Kanawha, the 3½ miles between its mouth and the lower dam has become a perfectly safe ice harbor, and that it only needs a small expenditure to be made complete. That slackwater dams will protect from ice is the usual experience on all rivers that have been thus improved, and I have no doubt that the statement as to the result on the Little Kanawha is strictly correct. There are others who go even further and state that no boat was ever injured while wintering in the mouth of the Little Kanawha. In Appendix A will be found a number of affidavits as to the safety of the Little Kanawha in ice floods.

The following table gives the widths and depths in the mouth of the Little Kanawha within the limits of the survey:

Cross sections at—	Distance above mouth.	At time of survey (5′.73 on gauge).		At low-water (0 on gauge).	
		Width.	Depth.	Width.	Depth.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet. in.*
Foot of Ann street	220	340	12	275	6 3
At bridge	1,100	230	*12	175	*6 3
1,746 feet above bridge	2,846	409	9 to 10	330	3 3

*Obstructed by remains of old pier.

This shows that the river is undoubtedly narrower than is desirable for the handling of fleets, but that there is a sufficient depth of water except in very low stages. The river is usually low when it freezes over, but the dead low stage occurs in the fall months, and there is always an increase in depth before winter sets in.

The remains of the middle pier of the old bridge are an obstruction that must be removed before this harbor can be fully utilized. The cross-section at the site of the bridge shows very clearly how great an obstruction it is. The top was somewhat lowered during the fall just past, but more work must be done before access to the river above the bridge can be considered as entirely safe in low-water. It is evident also that the river is too narrow to permit a coal fleet to be turned around. Any fleet entering this harbor must be untied and reformed, or it must be backed out.

The chief obstruction to the present use of the mouth of the Little Kanawha is the lack of height of the bridge that spans it ⅕ of a mile above the mouth. The bottom of this bridge at its middle is 42 feet 8 inches above the zero of the gauge, and as the highest recorded high-water (that of April, 1852) reads 60.14 on the gauge, it is evident that the bridge is 18½ feet *below* high-water. While it is a reasonable answer that such a flood is exceptional, it is nevertheless plain that a bridge which is only at the level of *ordinary high-water* cannot have any spare space under it for steamboats at any stage. That this is the fact I can testify from my own experience, as I once tried to take the U. S. snag-

boat E. A. Woodruff up the Little Kanawha in ordinary low-water, but could not get her under this bridge, although the Woodruff is not a high boat. The difficulty was not with the chimneys, which can be lowered, but with the pilot-house.

It is evident that if the mouth of the Little Kanawha is to be fully utilized as a harbor of refuge for Ohio River boats, the bridge over this river ought to give as much head room under it as is given by the Ohio River bridges in the neighborhood.

As a rule, boats only seek such harbors during low or moderate stages, but as ice always goes out on a rising river, boats that ventured in and passed above the bridge might be unable to return until long after the ice had departed.

There are three ways of remedying this objection :

1. The government might buy and destroy the bridge.

This alternative, however, is a very objectionable one, as the bridge is a needed public improvement, and its total destruction would be a step backwards. There are a number of refineries and other industrial establishments on the west side of the river that need close communication with Parkersburg, besides the necessity of providing an easy inlet from the surrounding country. I am informed unofficially that the bridge company will sell outright for $32,500.

2. The bridge might be turned into a draw-bridge.

This alternative is also highly objectionable, as it would necessitate the reconstruction of the central pier, whose foundations are now a serious obstruction. The objection would not be so great if the basin above the bridge were so commodious and afforded so excellent a harbor as to justify a considerable outlay of time and trouble in order to reach it. Unfortunately, the mouth of the Little Kanawha is contracted, and therefore, if it is to be utilized at all, access to it must be perfectly free. I cannot therefore recommend that the present narrow channel be reduced by a large pivot pier, and that the present single span, that covers the whole width of the river, be changed into two short revolving spans. The width at the site of the bridge was only 230 feet at the time of the survey, when the gauge-reading was a little less than 6 feet; and if 30 feet of this were taken up by a pivot pier, it would leave only 100 feet on each side for navigation. As this is precisely the width of an ordinary coal fleet four barges wide, it evidently leaves no margin for leeway, and is insufficient.

The bridge company is willing to permit this change to be made at the expense of the United States, provided the latter will pay the bridge company $400 per month for the time in excess of 90 days that travel on the bridge is stopped. Their letter to this effect is annexed as Appendix B.

The cost of transforming this bridge into a draw-bridge is estimated at $30,000, it being assumed that the transformation can be made without incurring the penalty mentioned above.

3. The bridge might be raised to a sufficient height to allow boats to pass under at all stages.

As this change is to benefit steamboats that navigate the Ohio, it ought to conform to the rules that regulate the heights of bridges on that river. The act of Congress regulating bridges over the Ohio River above the mouth of the Big Sandy prescribes that they shall be 90 feet above low-water, and the bridge at Parkersburg conforms to this law. This, therefore, is the height to which the highway bridge over the Little Kanawha ought to be raised. As this bridge is now only 42 feet 8 inches

above low-water, it will require an additional height of 47 feet 4 inches in order to be on a level with the Parkersburg bridge over the Ohio.

Local circumstances are such that the utility of the bridge would be destroyed if it were raised to this height. I therefore caused estimates to be made on an assumed raising of 32 feet. The survey and estimates were made by Mr. W. E. Strong, assistant engineer, and are as follows:

HUDSON, OHIO, *January* 9, 1879.

SIR: I have the honor to submit the following report of a plan for raising the wagon bridge near the mouth of the Little Kanawha River, at Parkersburg, W. Va.

It is proposed to raise the bridge 32 feet. The estimate already submitted of the cost of doing this is based upon the following plan of operations (A):

1st. The erection of false work and removal of bridge from its present position.

2d. The entire removal of both abutments.

This course is required on account of their imperfections and improper construction. The west abutment is badly cracked, and although strengthened by iron bands and tie-rods, is hardly secure as a support for the bridge at its present grade.

The east abutment is apparently in good condition, but the substantial portion of it is a mere shell. The entire backing was, according to the specifications in the hands of the secretary of the Little Kanawha Bridge Company, laid up dry.

The cost of the removal of the old abutments is not included in this estimate, because it is assumed as being equivalent to that of quarrying the same amount of stone, with a decided advantage in respect to haul.

3d. Building piers to the height required for the new grade.

As now constructed, the west end of the bridge is 3.7 feet higher than the east end, and the same relative height has been preserved in this plan, for the reason that thereby the long approach on the east side is made some 92 feet shorter, and a considerable saving effected in lengths of trestle-posts, assuming the same grade as in the plan adopted.

The assumed section of the tops of the piers is 6 by 28 feet, and the height from top of foundations 72 feet. The batter is 1 inch per foot; this gives the area of base 18 by 40 feet.

A careful computation of all strains to which the piers can be subjected indicates ample stability in one of the above dimensions.

4th. The re-erection of false work and replacing the bridge in position.

I have included the cost of first putting up false work, removing the bridge from its present position, again erecting false work, and again replacing bridge in one lump sum, based upon a bill of timber required for the false work and an estimate of the cost of the work, made by Mr. G. W. Talley, the carpenter who raised the bridge when first built, viz, $4,000.

5th. The construction of approaches to each end of the bridge.

The approach on the east side is to extend a distance of 650 feet up Market street, Parkersburg.

The approach on the west side is to extend 260 feet to the bluff. That on the east side is to descend with a grade of 4 feet in 100, which will just about give under passage at Neal-street crossing.

On the west side the grade descends 5 feet in 100, which brings the roadway to the ground at a suitable point to meet a new road proposed to be built by Wood County.

As these grades are within the limits of good engineering practice for highways, the only objections that can exist to them are those of a nature connected with the construction and stability of the work.

One objection to them grows out of the horizontal strains that must be resisted by the piers. Those acting on the large piers, as has been already stated, are not sufficient to endanger their stability.

In order to relieve the iron trestles in the east approach from this horizontal strain, it is proposed to make the spans continuous each way from the ends of the approach toward the center, to fix them at the extreme ends, one to the masonry pier and the other to the abutment at the lower end of the approach, and to leave them free to expand and contract at the middle of the approach, being divided there. In this way I think that all objections on account of grades may be overcome.

Plan and estimate A suppose the approaches built of 65-foot spans, supported on iron trestles of two groups of Phœnix columns, four in a group, braced together at intervals of from 6 to 10 feet.

The trusses are of the Murphy-Whipple plan, 6 feet 6 inches between axes of chords, and the same distance for the panels. The floor-beams are I section, 28 feet long, projecting 4 feet at each end outside of the axes of the trusses in order to support a sidewalk. They are trussed. They also act as struts for the lateral bracing, and are suspended under the posts. The ties for the lateral bracing have a run of three panels.

There is an iron hand-rail on iron I-section posts for the sidewalks.

The flooring is to be of 2-inch oak plank laid obliquely, supported on white pine longitudinals 3 by 10 inches, and 30 inches between centers.

The iron trestles have a system of transverse bracing extending down 6 feet from the caps. The lower portion is left open to accommodate traffic. The bases of the columns in a group are bolted to a bed-plate of wrought iron, which in turn is either bolted to a pier of masonry or to a cast-iron anchor sunk in a pit and filled in and around with concrete and stone.

The tops of the columns are connected in a similar way to a plate that acts as a bridge-seat, and all have expansion rollers.

The strains in the upper set of five spans resulting from the horizontal components of their weight will be tensile, while those in the lower five spans will be compressive. For the purposes of estimate, these neutralize each other.

Estimate B is based upon the modification of A, which consists in substituting short spans of $16\frac{1}{4}$ feet for all but four of the 65-foot spans, viz, one on side adjoining west pier, two on east side adjoining east pier and extending over Kanawha street, and one at crossing of Neal street.

The tracing for plan B shows sufficiently the construction of the short spans. Their advantages over the long spans consist in less cost of construction and greater longitudinal rigidity, while they possess the disadvantage of interfering more with traffic.

This report is accompanied by tracings marked A and B, and corresponding with the estimates A and B, which give plan and elevation of bridge and certain sections and details.

Respectfully submitted.

Your obedient servant,

WM. E. STRONG,
Assistant Engineer.

Col. WM. E. MERRILL,
Major, Corps of Engineers, U. S. A.

Estimate A of cost of raising wagon bridge near mouth of the Little Kanawha River, Parkersburg, W. Va., 32 feet, and of approaches.

Quantities.	Description of work.	Price.	Amount.
1,100 cubic yards	Foundation excavation	$0 30	$333 00
517 cubic yards	Rough ashler masonry	6 00	3,102 00
2,226 cubic yards	Quarry-faced masonry	8 00	17,808 00
38.4 cubic yards	Cut-stone masonry	10 00	384 00
90,088 pounds	Wrought iron in trestles	08	7,207 04
345,145 pounds	Wrought iron in 14 spans (65′ each)	10	34,514 50
64,585 pounds	Cast iron in 14 spans (65′ each)	05	3,229 25
5,760 pounds	Cast iron in trestles	05	288 00
49,140 feet, board measure	White-oak flooring	015	737 10
26,844 feet, board measure	White-pine joists	02	536 88
	False work, removing and replacing 300-foot span	.....	4,000 00
	Damages to property, south side	.....	2,000 00
	Engineering and contingencies, about 7 per cent	.....	5,860 00
		.....	80,000 00

Estimate B, being a modification of estimate A, caused by substituting shorter spans in the approaches.

Quantities.	Description of work.	Price.	Amount.
1,140 cubic yards	Foundation excavation	$0 30	$343 30
129 cubic yards	Concrete and stone filling for anchors	6 00	774 00
466 cubic yards	Rough ashler masonry	6 00	2,796 00
2,226 cubic yards	Quarry-faced masonry	8 00	17,808 00
26.1 cubic yards	Cut-stone masonry	10 00	261 00
98,613 pounds	Wrought iron in 4 spans of 65 feet	10	9,861 30
37,087 pounds	Wrought iron in trestles for 4 spans of 65 feet	08	2,966 96
97,654 pounds	Wrought iron in trestles, 38 short spans	08	7,812 33
18,450 pounds	Cast iron in 4 spans of 65 feet	05	922 50
2,057 pounds	Cast iron in trestles for 4 spans of 65 feet	05	102 85
30,980 pounds	Cast iron in trestles, 38 short spans	05	1,549 00
49,140 feet, board measure	White-oak flooring	015	737 10
44,833 feet, board measure	White-pine joists and rails	02	896 66
	False work, &c	.....	4,000 00
	Damages, south side	.....	2,000 00
	Engineering and contingencies	.....	7,169 00
		.....	60,000 00

The Bridge Company refuses its consent to the raising of their bridge. Their statement to this effect is annexed as Appendix C.

It will be seen from Captain Chancellor's letter (Appendix D) that the mouth of the Little Kanawha is frequently obstructed by masses of Ohio River ice, thus preventing ingress or egress. This action is less marked now than formerly, on account of the effect of the piers of the Parkersburg bridge in breaking up the large fields. It has been suggested that if a few timber and stone ice breakers were placed below the bridge, on the West Virginia side of the channel and opposite the centers of the side spans, these auxiliary piers would still further break up the masses of floating ice and help to prevent any gorging across the mouth of the Little Kanawha.

The idea is a good one, and I think that it is worth trying. The expense will be small, and, if any injurious result should follow, the ice breakers can be torn up without extra cost by the government snagboat.

I would propose two piers, composed of wooden cribs filled with riprap, and similar in construction to those used on the Ohio and Monongahela rivers for the protection of coal barges. They should be placed opposite the middle points of the two short spans that adjoin the channel spans on the south, and at a distance below the bridge of from 100 to 200 feet, the exact distance to be determined when work is begun. From the action of these piers we can judge the advisability of building more or of removing these.

I would recommend that they be built to a height of 30 feet above low-water, and they be so arranged as to admit of raising if additional height should prove advisable. If we follow the experience acquired elsewhere in similar piers, we will give these a width of 22 feet and a base of 56 feet. The up-stream end should be a smooth inclined plane with an angle to the horizon of 45°. The rest of the crib can be built log-house fashion, but no ends of timbers should project from the sides.

The estimated cost of one of these piers, including engineering and contingencies, is $3,000. The two would therefore cost $6,000.

SUMMARY.

The work therefore that is needed to utilize the mouth of the Little Kanawha as a harbor of refuge is as follows:

1. To raise the highway bridge on the Little Kanawha 32 feet.
2. To remove the remains of the old center pier of this bridge.
3. To build two ice-breakers below the railroad bridge across the Ohio.

The first object cannot be accomplished without buying out the bridge company, which I consider unadvisable.

The second object should be attained by the bridge company at their own expense. They have left in the river an obstacle to free navigation which they should be compelled to remove. The law would probably hold them responsible for any damages caused by this obstruction, but the removal of the obstacle is more important to navigation than a possible mulcting of the bridge company.

The third object can be attained by the United States at the moderate cost of $6,000. I think that it is worth the trial.

The clause in the river and harbor act under which this report is made orders a comparison between the cost and merit of an ice harbor in the mouth of the Little Kanawha and one in the mouth of the Muskingum. In another part of the same act the Muskingum ice harbor is

formally adopted by the appropriation of $30,000 to commence work. Under this appropriation a contract has been made for the delivery of the necessary stone.

Under these circumstances the only question left unsettled is whether, in view of the adoption of the Muskingum ice harbor, it is advisable to spend any money at the mouth of the Little Kanawha.

I would reply that the amount recommended is very small, and as the localities are 12½ miles apart, a boat might be able to seek a refuge in the Little Kanawha that could not get to Marietta. I therefore think that the work at the mouth of the Muskingum need not preclude that at the mouth of the Little Kanawha. There is no danger that the navigation of the Ohio will ever be made too safe.

This report is accompanied by a map of the locality and by a tracing showing the plan proposed for raising the bridge over the Little Kanawha.

Respectfully submitted.

WM. E. MERRILL,
Major of Engineers.

General H. G. WRIGHT,
Chief of Engineers, U. S. A.

APPENDIX A.

AFFIDAVITS AS TO THE SAFETY OF THE LITTLE KANAWHA RIVER IN ICE FLOODS.

1.

This may certify that I have been a resident of Parkersburg, W. Va., for over fifty years, and have been engaged in the wharf-boat business at the mouth of the Little Kanawha River for the last thirty years, and during that time there has been more or less number of steamboats put into the mouth of said stream for winter quarters, and no steamer has ever received the slightest injury from ice whilst in this harbor.

I will further state that I consider it, since the erection of the dam about four miles above the mouth, as the safest ice harbor on the Ohio River.

LEONARD CROSS.

Subscribed before me this 18th day of December, 1879.

E. P. CHANCELLOR,
Notary Public.

2.

This may certify that the undersigned have been residents of Parkersburg for the last sixty years, and during that time no steamboat harbored in the mouth or at any point on the Little Kanawha has ever been damaged by ice to our knowledge; and we further certify that we believe the Little Kanawha the best natural harbor (being deep) on the Ohio River.

H. LOGAN,
WM. LOGAN.
LAW. P. NEAL.
S. N. NEAL.
GEO. B. NEAL.

Subscribed before me this 18th day of December, 1879.

E. P. CHANCELLOR.
Notary Public.

APPENDIX B.

RESOLUTION OF THE LITTLE KANAWHA BRIDGE COMPANY.

At a meeting of the stockholders of the Little Kanawha Bridge Company, called by the president and directors thereof, and held at the office of Dr. A. G. Clark, in the city of Parkersburg, W. Va., in pursuance of a public notice, on Wednesday, the 31st day of December, 1879, at 10 o'clock a. m.

Present, a majority of stockholders of said company, representing a majority of the capital stock thereof, and a majority of the votes of the said company.

The president of the board of directors explained the object of the meeting, and, on motion of Dr. A. G. Clark, the Hon. George Loomis was called to the chair.

"On motion of William M. Evans, seconded by Henry Logan, it was unanimously

"*Resolved*, That in contemplation of the proposition for the construction of an ice harbor in the Little Kanawha River by the United States, and in view of the fact, in the construction of such ice harbor, it will be necessary to alter the present bridge of this company across the said river at the city of Parkersburg by making the same a draw-bridge, this company hereby gives its consent to such alterations on the following conditions:

"If the crossing of the said bridge shall not be interrupted more than ninety days, then this company will require no consideration as compensation for the said bridge during such ninety days; but if such crossing shall be interrupted more than ninety days, then this company to be paid ($400) four hundred dollars per month for the time the crossing of the said bridge shall be so interrupted beyond such ninety days.

A copy from the minutes under the seal of said bridge company by its secretary.

[SEAL.] S. C. SHAW, *Secretary, &c.*

APPENDIX C.

LITTLE KANAWHA BRIDGE COMPANY TO MAJOR W. E. MERRILL, CORPS OF ENGINEERS.

PARKERSBURG, W. VA., *January* 9, 1880.

SIR: In reply to your letter of the 8th instant, I have the honor to inform you that at a called meeting of the stockholders of the company held on the 31st ultimo, the question of granting permission to the United States Government to "*raise* their bridge, continuing it in its present form," was discussed at length and met with *insurmountable opposition*, the main objection being the damage that would result to private property of our citizens, especially that on Market street, by reason of the elevated approach which would be necessitated by the change. The only proposition which did obtain their willing consent was the one embodied in the resolutions of which, by order of the meeting, you were furnished an official copy, viz, that of changing the present into a draw-bridge.

Very respectfully, your obedient servant,

W. VROOMAN,
President Little Kanawha Bridge Company.

Col. W. E. MERRILL,
Major, Corps of Engineers, U. S. A.

APPENDIX D.

CAPTAIN E P. CHANCELLOR TO MAJOR W. E. MERRILL, CORPS OF ENGINEERS

PARKERSBURG, *December* 13, 1879.

DEAR SIR: In compliance with a promise made some time ago, although a little late, I write in the interest of steamboat owners, river men, and shippers on the Upper Ohio, with the view of calling your attention to the necessity of an ice harbor and its small cost, at the mouth of the Little Kanawha River. This is probably the most remarkable stream emptying into the Ohio, as it is the only one of any size on the Upper Ohio which has deep water at all times at its mouth, and which maintains this depth for 4 miles to the first dam, giving mooring for boats for 8 miles on the two sides of this harbor. This dam spoken of is 14 feet high, and breaks the ice as it passes over, and renders it harmless to boats below it. The only trouble ever experienced, heretofore, in a general break up, has been in the Ohio; ice in large cakes stopping

the mouth of the Kanawha, and gorging. This difficulty has been obviated to some extent by the building of the great railroad piers, about half a mile above in the Ohio. By the erection of three additional piers between the bridge piers on the Virginia side, it would entirely protect the Kanawha from gorging, and render the harbor absolutely safe. These piers would have a tendency to stop the ice early at this point, and allow the ice below to flow out and give open navigation through the winter to all points below, and give boats below an opportunity of making the harbor of safety before the terrible break up from above should occur.

It would be necessary to raise the bridge now spanning the Kanawha River, say 30 or 35 feet, to give ample room for boats to go under at any stage of water. This would be better, if not cheaper, than a draw-bridge, and would not necessitate the erection of piers which would obstruct navigation. The Kanawha heads south, and does not freeze up so early nor so heavy, and it disappears much earlier than ice in the Ohio or streams heading north. There have been more or less steamboats laid up for ice in the mouth of this river for the last forty years, or since the invention of steamboats, and not one has ever received the slightest injury. This proves its absolute safety as a harbor for the protection of boats from the destructive ice floes which occur almost every winter in the Ohio River.

The cost of these improvements would be very little indeed compared to the great benefit which would ensue to the commerce to the Ohio Valley. Every facility will be offered by the citizens of Parkersburg, the bridge company, and others whose interest may in any way coneect them with the improvement. The Little Kanawha has lately become a navigable stream of the United States, as also a post route, I believe, and the bridge over it should be raised, as it is now an obstruction. This would be at least half the cost of the improvement.

Traffic has very much increased on the Kanawha since the slackwater has been completed, and several steamers are engaged in transportation and towing on it.

In conclusion I may say that the Little Kanawha is the *best natural harbor* on the Ohio River; the expenditure to perfect it has four-fifths been made in the building of the dam before mentioned and the erection of the bridge piers in the Ohio, and I feel well assured if the matter is understood by Congress there will be no hesitation in granting the necessary funds to complete it. In doing so there will be no necessity for additional outlay in all time; no dredging, no locks to keep up, no superintendents to pay, and all this at probably one-tenth the expenditure to construct an effective or safe harbor at any other point.

Hoping that your views may not be at variance with my own, and that you may recommend favorably to the Little Kanawha, I remain,

Your obedient servant,

E. P. CHANCELLOR.

Col. W. E. MERRILL,
Major, Corps of Engineers, U. S. A.

SURVEY FOR ICE-HARBOR AT BELLAIRE, BELMONT COUNTY, OHIO.

UNITED STATES ENGINEER OFFICE,
Cincinnati, Ohio, January 10, 1881.

GENERAL: The river and harbor act, approved June 14, 1880, ordered the following survey: "Ice-harbor, Bellaire, Belmont County, Ohio."

This work having been assigned to me, I have the honor to submit the following report:

The most natural method of protecting the landing at Bellaire from ice floes, is to place obstructions above it, so as to break the fields of moving ice into sections too small to do any damage. This is already partially effected by the railroad bridge, but the openings between the piers are so wide that the ice fields that pass the bridge are still large enough to to do serious injury. It is therefore proposed to bisect these openings by means of intermediate piers. In locating these piers, we must try to place them where they will at the same time afford the maximum obstruction to the ice and the minimum obstruction to the current, as any serious stoppage of the current would inevitably cause the

harbor to silt up, and thus make our expenditure useless, by destroying the thing for whose benefit it was incurred.

It is clear that an additional number of ice piers would make a better protection from ice, but it is equally certain that they would greatly increase the danger to the harbor from silting up.

Under these circumstances I think that a reasonable prudence requires that we first build two piers, intermediate between the stone piers of the bridge, and see what effect they have upon ice floes. Should these accomplish our purpose we will save the cost of the others, and the risk of injury to the harbor from deposits. Should they fail, the three additional piers, shown on Mr. Harlow's map, can be added at some future time.

I therefore submit the following estimate:

Two crib piers 20 feet by 20 on top, at $3,000	$6,000
Engineering and contingencies	1,500
Total	7,500

I would add that I believe this to be a useful and necessary work; but its cost should be provided for by a special ice harbor appropriation, as the general appropriation for the Ohio River is always too small for the proper prosecution of other kinds of work that are much more important to the general interests of navigation.

There is another important point to which attention should be directed. Should these ice piers be successful they will create an ice-harbor below them, which in the present case will cover the space between the railroad bridge and McMahon's Creek. This ice-harbor will necessarily belong to the owners of the bank which forms one of its boundaries, and these owners will be entitled to charge wharfage for the use of a harbor created by the funds of the general government.

There are apparently but two feasible methods of avoiding this objection.

1. The United States might purchase all riparian rights from the site of the upper ice pier, to McMahon's Creek; but this would probably be objectionable to the citizens of Bellaire, as they would doubtless prefer to own their own landing, and to be free to manage it to suit their own interests.

2. The same purchase might be made by the town of Bellaire. In this case, the United States might stipulate in advance that no wharfage, or other like charges, should be made against any vessel that entered this harbor during the winter months in order to obtain protection from actual or anticipated ice.

In this connection there naturally arises a question as to the necessity of purchasing sites for ice piers, and obtaining jurisdiction over them. It has not been customary to do this for works of this class, which are essentially the same in construction as the crib dikes on the Ohio, but it seems advisable to mention the matter so that the point may not be overlooked.

It has been suggested that ice piers at the head of Bogg's Island would be an advantage to river commerce. Mr. Harlow discusses this matter in his report. It is my present impression that such piers would be advantageous, but I do not submit any estimate for them, because no special survey was ordered or made; and, as it is improbable that appropriations for two sets of ice piers, so near together, would be made at the same session of Congress, it seems better to give precedence to the harbor at Bellaire.

For further details, I would refer to the report of Mr. J. H. Harlow, which is hereto annexed.

Respectfully submitted.

WM. E. MERRILL,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. J. H. HARLOW, ASSISTANT ENGINEER.

PITTSBURGH, PA., *January* 3, 1881.

DEAR SIR: In accordance with your instructions, I have made a survey of the Ohio River at Bellaire, Ohio, about the Baltimore and Ohio Railroad Bridge.

The object of the survey was to determine the cost and advantage of an ice-harbor at this point.

Bellaire, Ohio, is situated on the right bank of the Ohio River 4 miles below Wheeling, W. Va., and 94 miles below Pittsburgh, Pa. It has a population of 8,030 according to the census of 1880; but as several large iron-works have started up since the census was taken, the present population is supposed to be between 9,000 and 10,000.

The main business of the place consists of the manufacturing of glass and iron and the mining of coal; 2,000,000 bushels of coal were mined in 1879. About one-half of the coal mined and glass and iron manufactured is shipped by the river.

The question of the necessity of ice-harbors to be scattered along the Ohio River has been so often discussed it does not seem necessary to allude to it here.

The question, then, is as to the feasibility of building an ice-harbor at this point.

The ice that does the damage, and against which it is necessary to defend the boats, is that which comes down the river in large solid masses on a sudden break up. If this ice can be broken up there is not much danger to the boats. The piers of the various bridges across the river assist to some extent in breaking up this ice, but, as the spans of the said bridges are 250 feet and upwards in length, considerable-sized masses can pass between the piers without being broken up. Now, if any structure can be built between the piers of a bridge, and, at the same time, not interfere with the passage of the water, nor obstruct navigation, we can obtain an ice-harbor at a minimum of cost.

Bellaire presents such an opportunity, and I would recommend that timber cribs filled with stone be built under the two spans of the Baltimore and Ohio Railroad Bridge on the Ohio side. These cribs should have a height of 25 feet above low-water, and the top in plan should be 20 feet by 20 feet. The up-stream side should be an inclined plane, at an angle of 45 degrees with the horizontal. The upper side should be sheeted with oak to receive the wear of the ice. This would give a base of 20 feet by 45 feet. One crib should be placed midway in each of the spans on the Ohio side of the channel span, and 150 feet up-stream from the line of the bridge. Also one crib midway between the crib above the first span and the pier nearest the low-water line, and in line with said crib and pier. Also one each side of the crib above the second span, midway between, and in line with, the crib and piers. This will require five cribs to be built, the estimated cost of which will be—

240,000 feet (board measure) hemlock lumber, at $30	$7,200
45,000 feet (board measure) oak lumber, at $50	2,250
8,000 pounds drift spikes, at 5 cents	400
3,000 cubic yards stone filling, at $1.50	4,500
Total in place	14,350
Or say	15,000

This improvement will give a harbor 1,100 feet long and 250 feet wide, containing about 275,000 square feet.

A plan entitled "Ice-harbor at Bellaire, Belmont County, Ohio," is submitted.

The survey is confined to the figure A, B, C, D, and the streets of Bellaire and shore lines beyond this figure are plotted from a published map of Bellaire, Ohio.

My instructions were to examine the river about the Baltimore and Ohio Railroad bridge. But, in company with several gentlemen, miners, and shippers of coal, and boat owners, I walked up the Ohio shore as far as the head of Bogg's Island, about 2 miles above the railroad bridge.

The channel is on the West Virginia or left side of the island. The head of the island is a gravel bar.

Just above the head of the island, on the Ohio side, is a ferry landing which is built into the river to low-water line. These gentlemen informed me that when the ice breaks up it comes down the Ohio shore until it strikes this landing, when it is deflected towards the West Virginia shore, but not far enough to escape the head of the island, where it strikes, part of the ice passing down each side.

I would suggest that if cribs filled with stone were placed on this bar all the ice might be made to pass to the left of the bar, leaving the channel on the Ohio side of the island free from ice, and make a large and convenient harbor some 5,000 feet long and 500 feet wide, containing 2,500,000 square feet.

There might be an objection to a harbor here. At low-water there is not sufficeint water to float the boats. But I understand that before a break up there would always be time and water enough to get in before the arrival of the ice.

In case any boat should be caught here no great damage would occur, as the bottom is comparatively level and sandy. Flat-boats are often beached here to be repaired.

Respectfully,

J. H. HARLOW.

Col. WM. E. MERRILL,
Maj. of Engineers, U. S. A.

SURVEY FOR ICE-HARBOR AT POINT PLEASANT, WEST VIRGINIA.

UNITED STATES ENGINEER OFFICE,
Cincinnati, Ohio, January 10, 1881.

GENERAL: The duty of making the survey for "ice harbor at Point Pleasant, West Virginia," ordered by the river and harbor act approved June 14, 1880, having been assigned to me, I have the honor to submit thereon the following report:

Point Pleasant is at the junction of the Great Kanawha River with the Ohio, and an ice-harbor at this locality might be made in either river.

It appears from the report of Mr. J. H. Harlow, who made the survey, that Point Pleasant has already an excellent reputation as a natural ice-harbor, which is due to the fact that the Kanawha always runs out before the Ohio, and since a limited area can always be broken up by the boats in port, there is no great difficulty in shifting from the Kanawha into the Ohio, when the ice in the former begins to move, and in returning when the Ohio breaks up.

With the present limited number of boats that usually harbor here, there is no great need of protection from ice, but when the improvements now under way on the Kanawha are completed this river will have deeper water than the Ohio. It is, therefore, very probable that at times the mouth of the Great Kanawha will be full of coal barges, waiting for a rise in the Ohio to enable them to go to market at points below. Should the rivers freeze before the expected rise made its appearance, there would probably be a large amount of coal afloat in the Kanawha which would need protection.

It has been suggested that the government dams on the Kanawha would break up the ice as it passed over, and thus render it harmless. This is, however, a mistake, as the dams under construction are "movable" ones that are laid down when ice is running, and can therefore have no effect upon it. If these dams are built with piers, the latter will be useful in subdividing the ice fields; but as it is perfectly feasible to build them without piers, and as there are some advantages in so doing, it evidently will not do to assume that piers will be built, and to depend upon them.

The estimated cost of four ice piers to protect an area of 16,000 square

feet is $22,000, as is set forth in detail in the report of Mr. Harlow, which is hereto attached.

There are some important legal questions connected with the construction of ice piers, which are mentioned in the report of the Board of Engineers convened in 1878 to report upon a harbor of refuge at Cincinnati (Report of the Chief of Engineers for 1879, page 1361), and which have also been noted in the report of this date on an ice-harbor at Bellaire. The present case being almost exactly parallel to that at Bellaire, the remarks which were made in the latter case are here repeated, with the slight changes due to local differences.

If these ice piers are successful, they will create an ice-harbor below them. This ice-harbor will necessarily belong to the owners of the bank which forms one of its boundaries, and these owners will be entitled to charge wharfage for the use of a harbor created by the funds of the general government.

There are apparently but two feasible methods of avoiding this objection.

1. The United States might purchase all the riparian rights from the site of the upper ice pier to the mouth of the river. But this would probably be objectionable to the citizens of Point Pleasant, as they would doubtless prefer to own their own landing, and to be free to manage it to suit their own interests.

2. The same purchase might be made by the town of Point Pleasant. In this case the United States might stipulate in advance that no wharfage or other like charges should be made against any vessel that should enter this harbor, during the winter months, in order to obtain protection from actual or anticipated ice. In this connection, there naturally arises a question as to the necessity of purchasing sites for ice piers, and obtaining jurisdiction over them. It has not been customary to do this for works of this class, which are essentially the same in construction as the crib-dikes on the Ohio; but it seems advisable to mention the matter, in order that the point may not be overlooked.

Respectfully submitted.

WM. E. MERRILL,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. J. H. HARLOW, ASSISTANT ENGINEER.

PITTSBURG, PA., *January* 3, 1881.

DEAR SIR. According to instructions I have made a survey of the Ohio River, at Point Pleasant, West Virginia.

The object of the survey was to determine the advantages of an ice-harbor at this place.

Point Pleasant is situated on the left bank of the Ohio River, in Mason County, West Virginia, at the junction of the Great Kanawha and Ohio rivers, 263 miles below Pittsburgh, Pa., 173 miles below Wheeling, W. Va., and 80 miles below Parkersburg, W. Va. The population is said to be about 1,200. The principal business seems to be the supplying of the surrounding country and the repair of boats. There is quite a large dry-dock situated here, and at the time I was making the survey it was full of work. This seems to be a favorite place for the boats to tie up, on account of the harbor facilities.

The Great Kanawha at this point is about 600 feet wide, and has at low-water more than 8 feet of water nearly its whole width.

I consulted several parties here and the general sentiment was that the harbor as it now is cannot be much improved.

I am informed by those interested that the two rivers never break up at the same time, the Great Kanawha breaking up first. The Ohio River above the Great Kanawha River for 2 miles very seldom freezes over.

I have received the following letter in regard to ice in the Kanawha River:

"UNITED STATES ENGINEER OFFICE,
"*Charleston, Kanawha County, W. Va., December* 18, 1880.

"DEAR SIR: In reply to yours of the 15th instant, to-day received, I submit the following general information regarding the ice in the Kanawha from the winter of 1873–'74, the beginning of our record, which I hope will be found satisfactory:

"*Winter of* 1873–'74.—Some thin ice running, but no 'freeze up' during the winter.

"*Winter of* 1874–'75.—Ice (from 2 inches to 3 inches thick) broke up February 14; gauge reading 5.48 feet. River clear of ice February 20; gnage, 4.90 feet.

"*Winter of* 1875–'76.—Some thin moving ice in December and January; guage reading about 5 feet. Ice from ½ inch to 1 inch thick, 'no freeze up' during winter.

"*Winter of* 1876–'77.—Ice began to move January 12; gauge, 6.50 feet. River clear of ice on January 13; gauge, 13 feet. On 14th river again full of moving ice from Gauley and New rivers. Gauge, 22.25 feet. Clear on 15th.

"*Winter of* 1877–'78.—Heavy running ice (about 3 inches thick), early in January; gauge from 5.40 feet to 4.25 feet. River practically clear after January 12.

"*Winter of* 1878–'79.—Ice from 8 inches to 14 inches thick. Broke up January 10, by rise from upper New River. Gauge 9 feet when movement began. Soon gorged and continued so till the 16th, when gorge gave way. River clear of ice after 16th. Gauge readings (8 a. m.) 9th, 4.35 feet; 10th, 14.50 feet; 11th, 20.60 feet; 12th, 19.50 feet; 13th, 25.25 feet; 14th, 36.67 feet at 2 a. m., highest; 15th, 21 feet; 16th, 17.40 feet; 17th, 12.96 feet. River jammed full of strong ice from 10th to 16th.

"*Winter of* 1879–'80.—No ice of any consequence during winter.

"Zero of gauge 1.50 feet below low-water mark.

"Yours, very respectfully,

"A. M. SCOTT.

"Mr J. H. HARLOW."

When the Great Kanawha breaks up there has been no difficulty in taking the boats into the Ohio River, and back into the Great Kanawha when the Ohio breaks up. I understand that with one exception no serious damage has ever occurred, and this was at the time of the break up in the Great Kanawha in January, 1879.

As described to me by a gentleman living on the bank of the river at the junction of the two rivers, the boats were taken from the Great Kanawha into the Ohio, but one steamer was tied up too low down, so that the ice from the Great Kanawha struck her stern and broke her apart. As described by others, the ice in the Great Kanawha gorged after breaking up and then gave way with about 37 feet of water on the gauge at Charleston. The Ohio being low at this time, the ice and water were forced up the Ohio some 3 miles, and when the water receded some of the boats were torn from their fastenings and damaged.

The prevailing opinion at Point Pleasant seemed to be, that, if the first dam above Point Pleasant on the Great Kanawha and as now proposed for the improvement of that river was built, there would be no necessity for any other structure to prevent damage from the ice. The expected effect of this dam is that the ice would be broken up in falling over the dam, and that to some extent it would be held back, thus preventing a gorge between it and the mouth of the river.

If, however, it is thought best that some protection from the ice be given to the boats before this dam can or will be constructed, cribs filled with stone as recommended for Cincinnati (page 1361, Chief of Engineer's Report for 1879, part 2) might be built either in the Ohio or the Great Kanawha.

The Great Kanawha presents advantages that the Ohio does not.

1st. The Great Kanawha is more than 8 feet deep from its mouth to about one and one-half miles above the Ohio. This depth of water would always allow freedom in the handling of boats, and also reduce the expense of caring for the boats when once in position.

2d. As the Great Kanawha has its source farther south than the Ohio, there is less chance of heavy ice running at the break up.

3d. Draining less territory than the Ohio the floods would be sooner over.

4th. The dams of the proposed improvement would to some extent break up the ice and prevent damage.

5th. As the river at this point is narrow, not more than 2 or at most 3 cribs could be placed in line at right angles to the bank, and in order to obtain the necessary room several lines of cribs, several hundred feet apart, would have to be placed along the bank. This would prevent a great number of boats collecting at one point, and the risk from fire would be less.

The disadvantages are—

1st. Smaller harbor and less room to handle the boats than in the Ohio.

2d. The greater depth of water would require that the cribs be higher and have a greater base to give weight to overcome the greater leverage due to the height.

3d. The greater cost for same area protected.

If cribs are to be placed in the Great Kanawha, I would suggest that 2 cribs, 30 feet apart in the clear, the top to be 20 feet above low-water, and 25 feet by 25 feet in plan on top, be placed on the right bank about 800 feet above the landing on the Great Kanawha, and a second line of 2 cribs 1,000 feet farther up the river on the same side. This would protect about 160,000 square feet.

The estimated cost would be—

400,000 feet, board measure, hemlock, at $30	$12,000
24,000 feet, board measure, oak, at $50	1,200
9,000 lbs. drift bolts, at 5 cents	450
5,000 cubic yards stone, at $1.50	7,500
Total in place	21,150
Say	22,000

Respectfully,

J. H. HARLOW.

Col. WM. E. MERRILL,
Maj. of Engineers, U. S. A.

SURVEY OF THE OHIO RIVER AT THE HEAD OF HURRICANE ISLAND AND ELIZABETHTOWN, ILLINOIS.

UNITED STATES ENGINEER OFFICE,
Cincinnati, Ohio, January 15, 1881.

GENERAL: The river and harbor act approved June 14, 1880, orders the following survey: "The Ohio River at the head of Hurricane Island and Elizabethtown, Illinois."

This duty having been assigned to me, I have the honor to submit the following report:

Elizabethtown, Ill., is situated on the Ohio River, 279 miles below Louisville, 94 miles below Evansville, 43 miles above Paducah, and 88 miles above Cairo. The town lies opposite the foot of Hurricane Island, and at the lower end of the chute that passes on the north side of this island, which chute is not now navigable at low-water. There is, however, no difficulty in reaching the town from below, as there is plenty of water up to the landing even in the low stages. Under the present condition of affairs ascending steamboats run up to Elizabethtown and then drop down half a mile and continue their trips up the other chute. Descending boats go half a mile below the town and then round to and come up.

This is undoubtedly an inconvenience; and the loss of time necessary to run up to the landing and return may prevent boats from stopping that are not compelled to do so in order to deliver passengers, freight, or mails. On the other hand, if Elizabethtown were a large city, all boats would find it for their interest to stop there, since they would be reasonably sure of obtaining freights. If, therefore, the present business and the future prospects of Elizabethtown are as fair as is set forth in the letter from Mr. Lowry quoted by Mr. Harlow in his report, the town will not be damaged so long as the outlet by river is no worse than it now is.

But the people of Elizabethtown very naturally desire to have the channel pass directly in front of their town and thus guarantee them from a possible future injury.

In this connection it is of the utmost importance to know all that his-

tory can tell us of the changes which have occurred in and around Hurricane Island since the country was first settled by the whites.

The oldest map to which I have access is the reconnaissance of the Mississippi and Ohio Rivers, made in 1821 by Captains Young and Pouissin, of the Topographical Engineers, and Lieutenant Tuttle, of the Engineers.

This map has been lately published by the Engineer Department, and a copy is on file in this office. On it the channel is shown as passing on the *south* side of Hurricane Island; and as Elizabethtown does not appear on the map, it is probable that the town had not then been founded.

The next map is the one made in 1867 by my predecessor, Mr. W. Milnor Roberts. This map also shows the channel on the *south* side of Hurricane Island, but at the head of the other chute is a note, "No channel since 1860," from which we necessarily infer that, prior to 1860 the main channel passed on the northern side of Hurricane Island. This note is the only documentary evidence which I can find that the channel ever followed the *northern* chute. The map accompanying the present report shows that the channel is now on the *south* side of Hurricane Island.

The evidence, therefore, proves that during the whole of what may be called the historic period, beginning at some date prior to 1821, the channel has been on the *south* side of Hurricane Island, except that during some unknown part of the period between 1821 and 1860 it was on the northern side.

We are, therefore, justified in treating the southern chute at Hurricane Island as the main channel of the river. It is true that this channel is narrow as compared with that on the northern side, but its narrowness is the cause of its deepness, and depth is the main requisite for a good navigation.

Although this channel is narrow in comparison with the widths that prevail on the lower Ohio, it is still 800 feet wide at its narrowest point, and this is ample for all kinds of navigation.

It is alleged in Mr. Lowry's letter that there is danger of the formation of a new channel through some low ground near Hurricane Creek and adjoining the southern chute. I am satisfied upon investigation, that this danger is purely imaginary. Any possible route that such a channel could take would at least be as long as the present channel, and therefore there would be no inducement for the river to take such a route and do the immense work necessary to scour it out, when a deep and open channel of equal length was available.

Cut-offs on the Mississippi and Missouri are only formed when a narrow neck separates two points that are many miles apart by the channel. The difference of level corresponding to many miles of river generates a head of water that is capable of removing enormous masses when it is fully developed. Such conditions are wholly wanting at Hurricane Island.

Mr. Lowry also asserts that 3 fine steamers and several fleets of barges have been totally wrecked in the southern chute of Hurricane Island, "within a few years."

Feeling certain that these casualties had not occurred during the ten years in which I have been connected with the river, I caused a careful inquiry to be made among the underwriters of Cincinnati, and I learned that one barge was sunk near the foot of Hurricane Island "10 or more years ago," and that 2 or more steamboats were lost at the head of Hurricane Island "15 or 20 years ago." I feel certain that had any

serious casualty happened at this locality during the period of my administration, I should have recollected something about it. But these accidents are all referable to a period prior to the construction of the Ohio River snag-boat E. A. Woodruff. The following table shows the number of snags removed by her from the southern chute at Hurricane Island during the last 5 years:

Date.	Number.	Weight in tons.		
		Largest.	Smaliest.	Average.
1876.				
July 28	6	42.88	1.30	13.00
November 18	3	27.32	2.40	13.00
November 29	6	37.52	9.60	20.00
Total in 1876	15			
1877.				
August 18	5	22.76	2.94	14.50
August 20	9	30.25	0.50	11.00
September 4	10	42.42	0.60	12.00
September 5	9	68.09	0.90	18.50
Total in 1877	33			
1878.				
November 12	5	26.90	1.10	14.00
Total in 1878	5			
1879.				
August 20	2	5.75	5.40	5.50
August 21	8	90.69	2.21	22.50
August 22	8	78.12	3.00	35.00
August 23	6	77.52	1.40	23.00
Total in 1879	24			
1880.				
September 1	14	33.60	6.20	12.00
September 10	5	6.30	4.86	4.00
Total in 1880	19			

As far as could be discovered, the channel was wholly clear of snags each time that the boat left it, and the majority of the snags subsequently removed were new ones that had washed in, although it is probable that from time to time old "residenters" rise to the surface, and are discovered and removed, thus making the cleaning up more thorough each year.

A study of the record shows a steady diminution in the number of snags, and a fair prospect for greater safety to navigation.

If Hurricane Island were the only island where snags were found it might be worth while to go to some expense to change the channel, but it is no worse than Stewart's Island, The Sisters, Slim Island, French Island, and other points.

It is useless to attempt to keep snags from coming into the channel of the Ohio River, and as long as the government provides a snag-boat that is capable of removing every known snag during the season's work, the question of snaggy channels ceases to be of any importance. Inasmuch as the snag-boat must be kept in commission in any event, there would be no saving in cost if the channel at Hurricane Island were changed to the northern side.

Desiring to know the views of river men as to the propriety of changing the channel at Hurricane Island, I requested the superintendent of

the Evansville and Cairo Packet Company to ascertain them and notify me by letter. The following is his reply:

EVANSVILLE, IND., *January* 10, 1881.

DEAR SIR: Replying to your message of the 8th instant, the opinions of all the boatmen in this section are about as follows, viz: There is a good, safe, permanent, and well-defined channel on the Kentucky side of Hurricane Island, one easily run, and should not be interfered with.

On the other hand, the Ohio River needs, very badly during low-water, a great number of dikes, &c., to improve places that cannot be navigated, viz, Oil Creek, Puppy Creek, Shawneetown, Caseyville, Walker's Bar, Cumberland, Cottonwood, and Grand Chain, and we would regard with much greater favor the improvement of bad places than the changing of good ones. The lesson of changing the channel from the different sides of islands to benefit corporations, as demonstrated at Cumberland Island and Smithland, should not be forgotten.

Yours, truly,

G. J. GRAMMER,
Superintendent.
Col. W. E. MERRILL.

In the light of the preceding facts and statements, we are now able to make the following concise summary of the situation:

The citizens of Elizabethtown wish the United States to change the channel of the Ohio River from the south side of Hurricane Island, where it now is and always has been, except during a few years (number unknown) between 1821 and 1860, to the northern side, upon which their town is situated. This change would be of no benefit to the general river interest, and is opposed by representative river men. It is desired solely for the benefit of Elizabethtown, which now suffers some inconvenience, and may at some future day suffer serious injury.

The next question is one of cost. In dealing with a variable river, flowing over a movable bottom, it is impossible to make accurate estimates on the cost of hydraulic work. To turn the channel from its present course would require a dam across the present channel.

Wherever this dam were placed the water above it would stand at the same level as the water at the head of the island, and that below at the level of the water at the foot.

The whole fall of the river in a distance of 4 miles would be concentrated at the dam, and would form the static head of water that would have to be overcome during the construction of the dam and ever afterward.

This head, as deduced from the survey made under Mr. W. Milnor Roberts, would be 2 feet 1 inch during low-water. But until the new channel was completed, additional head would be required in order to raise the river surface high enough to permit it to flow over the sand bar at the head of the island, which is now dry during low-water. Under these circumstances we could hardly expect, at least during the early stages of the work, to have a less head to contend against than 3½ feet.

To build a dam across the Ohio under such circumstances and on such a bottom is a task of great magnitude, and one that requires special study and more information than was gathered during the present hasty examination.

So many precautions would be required against undermining and scour, that I would roughly estimate the cost at $150,000.

Additional data as to slope and depths are needed before a final project can be prepared, and I merely name this sum as an indication of the magnitude of the work and as a rough guide for Congress. Should

this change of channel be decided upon, a careful survey should be made during low-water.

I will add that my estimate is, in a measure, based upon the actual cost of the Evansville dike ($88,000), which was a much easier work than this will be. It would probably be more accurate to base our estimates upon the actual cost of the well-known "Cumberland dam" which was built at the head of Cumberland Island in order to make the channel of the Ohio pass by Smithland, but that dam was built many years ago, and I have been unable to obtain any record of its cost. I can only state that in 1872, '73, and '74 I expended $43,000 in *repairing* it.

It has been suggested that the proposed change of channel could be cheaply made by dredging. Experience unfortunately shows that dredging alone is never of any permanent benefit when applied to a bar of light material. The causes that put it there will replace it if removed, unless a change of regimen is produced by the introduction of new causes. Dams and dikes are such permanent new causes, and they therefore may effect permanent and radical changes, but dredging from its nature is transitory in action, and therefore transitory in result. The true sphere of the dredge is to remove rocky bars and points, and occasionally to hasten the action of dams and dikes.

Lastly, inasmuch as the proposed change would be of no benefit to general commerce, I would earnestly recommend that, should Congress see fit to order it, a special appropriation be made for the work, as the general appropriation for the Ohio River is never large enough to build the works that are urgently demanded for general commerce, and consequently many dikes whose construction would greatly benefit navigation are necessarily postponed from year to year.

For further details I would refer to the report of Mr. J. H. Harlow, civil engineer, which is hereto appended.

Respectfully submitted.

WM. E. MERRILL,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engimeers, U. S. A.

REPORT OF MR. J. H. HARLOW, ASSISTANT ENGINEER.

PITTSBURGH, PA., *January* 3, 1881.

SIR: I have the honor to submit the following report of a survey, made under your direction, of the Ohio River at Hurricane Island and Elizabethtown, Ill.

The reason for this survey is best set forth by the following copy of a petition to Congress, signed by the inhabitants of Elizabethtown, Ill., and vicinity:

"Your petitioners most respectfully represent that the navigation of the Ohio River at and near the head of Hurricane Island in said river is rendered incommodious and perilous for the following reasons, to wit: the main current of said river used to flow upon the north side and to the right of Hurricane Island, and the channel was broad and deep, and navigation easy and safe; and the river continued so to flow till about — years ago, when, owing to alluvion about 1 mile above the head of the island, the current began to deflect to the left and gradually formed a channel upon the south side of the island, though a very narrow one, and filled with snags and obstructions that render navigation perilous, to the great injury of commerce and the carrying trade in said river. That at the breaking up of the ice in the winter of 1878 and 1879 the current of the river commencing at the head of Hurricane Island set in toward the the south with greater force, and is now cutting off the soil on the left bank of the river and on the Kentucky shore at a rapid rate, to the great and permanent injury of the farmers upon that side of the river, whose farm lands are justly esteemed highly productive and valuable, but which will in the course of a few years be almost, if not

quite, destroyed. Your petitioners further represent that the town of Elizabethtown is situated on the right bank of the Ohio River, near the foot of Hurricane Island, and that said town is the principal trading and shipping point for a large section of country lying to the north, east, and west of said town; that since the changing of the current of the river as above set forth, the bar projecting from the foot of the island has been gradually extending down the river toward Jack's Point, and will soon project far enough down the river to cut off the harbor at Elizabethtown to such an extent that steamers cannot land at said town; that the channel of the river on the north side of Hurricane Island is still broad and deep below the obstruction near the head of the island, and if said obstruction was removed, which could probably be done by a little dredging, the current would naturally flow on the north side of the island, but owing to the obstructions above, will eventually fill up and the channel will thereby be destroyed, to the great detriment of the inhabitants on the Illinois shore and the people of Elizabethtown."

Elizabethtown, a town of about 700 inhabitants, is situated on the right bank of the Ohio River, 877 miles below Pittsburgh, Pa., 94 miles below Evansville, Ind., and 88 miles above Cairo, Ill., and is the county seat of Hardin County, Illinois.

An island about 4 miles long, called Hurricane Island, with its lower end opposite Elizabethtown, divides the Ohio into two channels.

The present navigable channel is on the south or Kentucky side of Hurricane Island, and has an average width of 1,000 feet, and at low-water has a greater depth than 12 feet, except for a short distance at the upper and lower ends. This channel is reasonably straight from the lower end of the island to 1 mile above the upper end. The banks are steep and are composed of clay, which wears slowly.

Between the upper and lower ends of the island there are some scattered snags along the shore.

About ½ mile below the head of the island, on the Kentucky side, a small creek, called Hurricane Creek, enters. Up this creek about 800 feet there is a depression several feet below the top of the river bank. About 3 miles farther down the river this depression is said to contain a pond, or small lake, which has its outlet into the Ohio about 2 miles below Elizabethtown.

During high floods, the water from the river backs up Hurricane Creek and flows through this low ground. It is claimed by some that this low ground is being rapidly worn deeper, and that the Ohio will at no distant day make through here a third channel, and not only give a less depth of water in the existing channels, but leave Elizabethtown some 2 miles inland.

Until the river overflows its banks there cannot be a great amount of water running down this low ground, for Hurricane Creek has an average width of only about 50 feet, and the water in reaching this depression makes two right-angle turns.

When the banks are overflowed the whole of the Kentucky bottoms are flooded.

At the time the survey was made there was no marked evidence that this place was being rapidly worn away. Several pilots with whom I talked said they could not see that the river had made any change here for the last 15 years, and they did not think there was likely to be any third channel.

The easiest as well as the cheapest way to prevent any water that backs up the creek running down this slough is to build a dam at the upper end of the slough alongside the creek.

As for the snags in this channel, if they are washed in from up river they will go into any other channel if prevented from going in the present channel. If they fall in from the bank, the best way would be to take care of them before they fall in.

The North, or Illinois Channel, is not at low-water as straight as the South Channel on account of the sand bars.

In case the main part of the river was turned to the north of the island, these bars undoubtedly would be changed and possibly be washed away altogether. In this case the channel would be wider and as straight as the South Channel.

The north channel is not as deep as the south channel, the depth being from 3 feet at upper end to 10 feet at a point 1 mile above Elizabethtown. From this point to Elizabethtown there is no bottom at 12 feet.

If all the water was turned into the north channel the depth would not be likely to be as deep as the present navigable channel, on account of the greater width, being about three times as wide.

At the upper end of the island, where the river divides, there are cross-currents, the effect of which is to cause a boat not well under control to strike the head of the island. This in high-water is dangerous, and I understand that several steamers have struck here.

There are at present a good many snags in this north channel.

From Elizabethtown up 6,000 feet the Illinois shore is rocky, and there are perpendicular rock bluffs 200 feet back from the river. From this point, for 17,000 feet, the land back of the shore line is flat and cultivated.

Above Hurricane Island there is a sand-bar which occupies two-thirds of the width

of the river between high-water lines. It is about 10,000 feet long and 3,000 feet wide in the widest part.

The highest part of this bar, 2,000 feet from the Illinois shore, is 8 to 10 feet above low-water, and is partly covered with small cottonwood trees. From the highest part it slopes gradually towards the Illinois shore and the low-water line of the river. On the Illinois side the bar is about low-water line, and has a little water on it. I was told by those interested in the change of the channel, that the bar near the Illinois shore had washed away some, and they think if a little work was done to start a channel through, the river would do the rest. I could not ascertain accurately when the navigable channel changed from the north to the south side of the island, but it was about 1850.

About 6,000 feet above the head of the island is a shifting sand-bar which, however, gives no trouble except in very low water, when only the smaller packets run. The pilots inform me that the bar is never in the same place long, and they are compelled to sound across it at each trip. During low-water the channel strikes the upper side of this bar, and then along its upper edge at nearly right angles with the river, to the Kentucky shore. This bar seems to be a wave of sand that is rolling down river, being continually washed from its upper to its lower side.

The business of Elizabethtown, and the reasons of a change of channel, are shown in the following copy of a letter from Mr. James A. Lowry, who acted as spokesman for those interested in a change.

"ELIZABETHTOWN, ILL.

"DEAR SIR: I should like you to take into consideration the following facts:

"1st. There is no business of any importance on the Kentucky side of the river from Ford's Ferry to Carrsville, a distance of 10 miles. This extent of landing lies along, above, and below the portion of the Ohio River involved in the question of a change of current.

"2d. There is, on the Illinois shore, near the foot of Hurricane Island, a thriving town of about 700 inhabitants, and doing a large amount of shipping. This town contains 10 dry-goods stores, 4 family grocery stores, 2 furniture stores, 2 drug stores, 1 book, stationery, and notion house, 2 undertaker's establishments, 2 steam flouring mills, 1 steam saw-mill, 2 blacksmith shops, 2 boot and shoe shops, 1 jewelry shop, 1 wagon and carriage shop, 4 cooper shops, 4 carpenter shops, 1 tin shop, 5 hotels, a printing office, post-office, express office, &c. There is more trade and shipping here than at any other town of equal size on the Ohio River. In addition to this, the country back of this town is very rich in minerals, especially iron, and in order to secure its early development we must have shipping facilities. There is an iron furnace near, owned by the Messrs. Lilly, now in full blast, working from 75 to 100 men a day, and which requires transportation for from 5 to 10 tons a day. There is also a splendid prospect for both silver and lead, and the supply of fine fluor spar is inexhaustible, and excelled nowhere in America. It is probable that in a few months mining will be carried on extensively.

"A railroad has been planned from here to El Dorado, connecting with the Saint Louis road, which, when built, will more than double the shipping requirements at this port.

"3d. The Kentucky chute is, and has been for several years, dangerous of navigation, and the government is required annually to expend large sums of money in removing obstructions from it. Three fine steamers and several fleets of coal barges have been totally wrecked in it within a few years. There is a long slough running down through the Kentucky bottom, with several deep lakes along its course, and this slough is becoming deeper every year. The force of the waters has nearly cut into it in one place, and if the current is not turned, so much of the water will go through this slough as to form a third chute, and thereby materially lessen the depth in the channel at this point.

"4th. The Illinois chute is straight, with rocky shores and deep channel, except at the head of the island, where it is obstructed by a sand and gravel bar. This bar can be removed by dredging, thereby insuring a wide, deep, and safe channel where it will do the most good.

"5th. It will be much cheaper in the end for the government to assist in re-establishing the channel along the Illinois shore, where, before the formation of the obstructing bars, we had safe navigation since the earliest recollection of the oldest inhabitants. Our business demands it, and the general good of navigation demands that something of this sort be speedily done.

"Very truly, yours,

"JAMES A. LOWRY.

"JAMES H. HARLOW,
"*Assistant Engineer.*"

The channel of the river might be changed to the north side of the island by dredging a channel through the sand-bar near the Illinois shore. This channel would be

about 10,000 feet long, and if taken out 4 feet below low-water would be about 7 feet deep.

If the main excavation was done by the river itself, the dredge would be required to excavate only enough to get itself through, say an average width of 40 feet. This excavated channel would require the moving of 2,800,000 cubic feet, or 103,700 cubic yards. To save cost the dredge might dump this material on the edge of the cut, but the river would soon wash it down stream again.

Before this channel could be used for navigation, the river would be required to move some 500,000 cubic yards, which would of necessity be deposited at some point farther down river.

To make the current follow this excavated channel it would be necessary to build a wing-dam from the Kentucky shore. As this bar is sand it would first be necessary to prepare a foundation. The foundation may be made of stone thrown in the river along the line of the dam. The width and depth of this foundation would depend upon how compact the sand was. In the estimate I have assumed a width of 40.5 feet and a height of 4 feet, which will make 6 cubic yards per linear foot.

The wing-dam to be built on this foundation to consist of crib work filled with stone. The top of this dam should be about the water-line as found at the time of the survey, making a height of about 8 feet; the width to be 15 feet. These dimensions would give 200 feet, board measure, hemlock, and 4 cubic yards stone per linear foot. The length required would be 2,000 feet, making the total estimated quantities and cost to be—

12,000 cubic yards stone in foundation, at $1.50	$18,000
400,000 feet, board measure, hemlock in dam at $30 per M	12,000
8,000 cubic yards stone in crib dam, at $1.50	12,000
103,700 cubic yards sand dredged and dumped on bank, at 15 cents	15,555
Contingencies	5,755
Total	63,310
Say	64,000

If the whole width of channel be excavated and placed so as not to wash back into the channel, the above estimate would be—

500,000 cubic yards sand dredged, at 30 cents	$150,000
Contingencies	15,000
Total	165,000

Less expense above:

Dredging	$15,555	
Contingencies	1,555	
		17,110
An increase of		147,890
Making a total of		194,090

The question now is, after the change in the navigable channel is made will navigation be benefited?

Those boats that desire to stop at Elizabethtown or 1 mile above would not have to return and go around the bar at the lower end of the island.

The greater number of boats, such as large tows of coal, have no occasion to stop at Elizabethtown, and therefore are just as well suited with the present channel.

Whatever advantage there may be in passing Elizabethtown will be nullified by the liability of striking the wing-dam; and this liability, it seems to me, will be greater than that of striking the upper end of Hurricane Island as the currents are now.

In answer to this question I cannot see that navigation will be benefited. But will any other interest be benefited?

The answer is that Elizabethtown and all interests centering there will be benefited, and the advantage will increase as the business of the surrounding country increases. If the ores about Elizabethtown are developed the river will be the best means for their transportation.

Respectfully,

J. H. HARLOW.

Col. WM. E. MERRILL,
Major, Corps of Engineers, U. S. A.

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46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 50.

SHEBOYGAN HARBOR.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Report of survey of Sheboygan Harbor, Wisconsin.

JANUARY 24, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 24, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, dated the 22d instant, in which he refers to his last annual report, and submits the accompanying copy of report from Maj. H. M. Robert, Corps of Engineers, on the survey of Sheboygan Harbor, Wisconsin, with estimates for further pier extension.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 22, 1881.

SIR: The survey of Sheboygan Harbor, Wisconsin, which was in progress at the date of my annual report of October last, having been completed, I have the honor to submit herewith a copy of a report received from Maj. H. M. Robert, Corps of Engineers, of the results of the survey in question, with estimates for further pier extension, which I beg leave to suggest be transmitted to the House of Representatives for the information of the Committee on Commerce.

The work on this harbor has been completed as planned and at a cost less than the original estimate therefor, but an extensive shoal having formed, within the last few years, just outside of the pier heads, Major Robert is of opinion that this obstruction cannot be permanently removed by dredging, and that pier extension has become a necessity. He suggests an extension of 1,000 feet on each pier, at a cost of about $150,000

(of which $40,000 would be for dredging between the prolongation of the piers), one-half of which amount could be profitably expended in one fiscal year.

There was a balance available July 1, 1880, of $9,307 from the appropriations for repairs of piers at this harbor.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY OF SHEBOYGAN HARBOR, WISCONSIN.

UNITED STATES ENGINEER OFFICE,
Milwaukee, Wis., January 15, 1881.

SIR: I have the honor to submit herewith a report and map of the survey of Sheboygan Harbor, Wisconsin, together with a project for the extension of the piers, as called for in your communication of July 3, 1880.

It has been very difficult to satisfactorily compare the various surveys made of this harbor during the last forty-four years. During the time I have been in charge of this district the datum planes for the various harbors have all been changed, the plane at Sturgeon Bay, Wisconsin, being raised 0.5 foot, and the planes at all the other harbors being lowered from 0.7 foot at Ahnapee, Wis., to 2.2 feet at Port Washington, Wis. The plane now used is ½ foot above the level of the lake in July and August, 1847, and 1.2 foot below the mean lake-level during the season of navigation for the last twenty years. The same plane is now used for all these harbors, and during the last two seasons the readings of the gauges were frequently about zero, showing that the plane was not too low. To conform to this new datum plane, the zero of the gauge at Sheboygan was lowered 1.2 foot in April, 1879.

Through the courtesy of Major Comstock, in charge of the Lake Survey, I have had the use of the detailed map of that survey, made in 1865, and it, together with the maps of the surveys of Lieutenants Center and Rose in 1836, and of Major Graham in 1856, have been all reduced to the same scale and to the same datum plane for comparison with the survey which I had made last July under the general direction of Assistant Engineer L. Y. Schermerhorn. The accompanying map gives the present soundings and also the shore-line and curves of 6, 12, 15, 18, and 24 feet for a distance of 1,000 feet on each side of the piers for each of the surveys of 1836, 1856, 1865, and 1880. The accompanying report of Mr. Schermerhorn shows in detail the changes that have taken place in the vicinity.

On the line midway between the piers, the 18-foot curve has advanced over 1,000 feet into the lake, while the 12-foot curve has advanced 1,170 feet, and the others in proportion. Even the 24-foot curve has advanced on this line 290 feet since 1856, or at the rate of 12 feet annually.

Passing to the line 1,000 feet south of the piers, we find the advance of the 18-foot curve 560 feet, of the 12-foot curve 940 feet, with the intermediate curves in proportion; while the 24-foot curve has advanced 240 feet since 1856, or 60 feet more than on the line between the piers.

The shoaling is not so great to the northward, but these facts show that the shoaling covers a large area and is very rapid. On the line 1,000 feet north of the piers there appears to be a deposit of about 6 feet as far out as the 18-foot curve; on the south line the deposit is a little greater, and on the central line it is 9 feet at the old 12-foot curve, and 13.5 feet at the old 18-foot curve, giving an average deposit of 8 feet over the entire area between the 12 and 18-foot curves of the original survey of 1836 for a distance of 1,000 feet on either side of the piers, which is as far as the recent survey extended. Even on the old 24-foot curve the average deposit is 3.8 feet.

It will be noticed that the shore-line has not advanced as rapidly as the 18-foot curve, and that the slope of the bottom is very gentle. While there is a bar off the mouth of the harbor, yet the survey shows that the deposit has been very uniform. The sand seems to be very fine and easily shifted wherever it is elevated above the surrounding bottom, as in a bar. It has always given trouble in sinking cribs, and the piers of no other harbor on this shore of the lake make such a poor showing. If a channel were dredged from the mouth of the harbor to deep water outside, a severe storm would probably level it off at once. At Ahnapee, Wis., before the pile piers were lined with sheet piles, a channel was dredged to a depth of 18 feet, and the week it was finished a storm came and filled it up to about 9 feet. At Sheboygan I have had some dredging done outside of the piers, but it is a very temporary device.

If a channel dredged to, say, 18 feet one season would be sure to maintain for one year a depth of 15 feet, I should recommend that a channel be dredged from the head of the piers to the 18-foot curve, a distance of 750 feet, with a width of 300 feet, and a depth of 18 feet; and then, allowing that there would be a fill of only 3 feet, there would have to be annually dredged 25,000 cubic yards in place, or, say, 30,000 cubic yards, scow measurement, at a cost of about $8,000. But with the experience of dredging at Two Rivers and Ahnapee, Wis., before the pile piers were lined, I have no faith in the success of the plan. I should not be surprised at a bar forming across the cut with the first storm.

A harbor of the importance of Sheboygan ought not to be left with such a doubtful entrance. If the dredging will not maintain a proper channel at the mouth, the only alternative is to prolong the piers. The objection to this is the expense and the fact that the extension of the piers seems to increase the deposit so rapidly as not to help the matter. But it seems to me that, as soon as the piers project sufficiently into the lake to be beyond where the 18-foot curve would naturally fall were it not for the indentation at this point, there will then be much less rapid advance of the curves.

To extend the piers to the present 24 foot curve will require an extension of about 1,000 feet on each pier, at a cost of about $150,000, of which over $40,000 is for dredging. In the last fifteen years there appears to have been a deposit of about 6 feet in front of the piers, where in 1856 there was 24 feet of water. Therefore, it is not allowing any too much margin to make the estimate upon the basis of reaching the present 24-foot curve. I would propose from the head of the present piers out, something over 500 feet, to the present 14-foot curve, to use pile piers 20 feet wide, filled with stone and well riprapped, square piles closely driven being used on the channel side; from this point to the present 20-foot curve, a distance of 300 feet, I would use crib piers 20 feet wide; and thence out to the present 24-foot curve I would use 24-foot cribs. The depths given are those at present found at these points,

but I should expect to find from 2 to 4 feet less water there when the cribs were actually sunk. The plan also provides for dredging the channel out to a depth of 18 feet in the extension, and to a depth of 16 feet between the present piers. Allowing 2 feet filling before the channel is redredged, and there would always be a 14-foot channel with 2 feet extra at the entrance.

The estimated cost of the project is as follows:

1,085 feet pile pier 20 feet wide, at $40	$43,400
600 feet crib pier 20 feet wide, at $60	36,000
300 feet crib pier 24 feet wide, at $73	21,900
127,000 cubic yards dredging, at 28 cents	35,560
Contingencies	13,140
Total	150,000

One-half of the entire amount could be profitably expended during the year ending June 30, 1882.

Very respectfully, your obedient servant,

HENRY M. ROBERT,
Major of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. L. Y. SCHERMERHORN, ASSISTANT ENGINEER.

MILWAUKEE, WIS., *January* —, 1881.

SIR: I have the honor to submit the following report on the recent survey of Sheboygan Harbor, Wisconsin:

A brief *résumé* of past projects and operations may be an aid in reaching deductions from the data furnished by this survey.

Operations were begun in 1852 in the extension of piers from the mouth of the river. The work was carried on under the direction of a board of harbor commissioners and with funds appropriated by the city and county of Sheboygan.

In 1852 the United States appropriated $10,000, and in 1856, by resolution of Congress, the unexpended balance of this appropriation, together with all tools, implements, and other property belonging to the United States and used in improving this harbor, were transferred to the harbor commissioners. Upon a map of the survey of this harbor in August, 1856, Maj. J. D. Graham states that "the harbor piers here laid down were constructed entirely by the local authorities of the city and county of Sheboygan. The United States have had no agency in their construction whatever." The operations of the harbor commissioners were continued up to 1860, at which time they had expended about $55,000, resulting in 780 linear feet of pier extension on the south, and 900 linear feet on the north side; at this time the north pier extended 320 feet farther into the lake than the south pier. The piers were extended to about a depth of 10 feet. The harbor commissioners had also done some docking and dredging in the river adjacent to the piers.

In 1864 the United States allotted $10,000, and constructed the work thereafter with quite regular appropriations. The entire amount appropriated and allotted from 1852 to 1880, inclusive, has been $190,448.91.

Resuming the pier extension at the point to which it had been carried in 1860 by the harbor commissioners, in 1865 128 linear feet were added to the south and 50 linear feet to the north pier. Col. T. J. Cram then presented a project for the completion of the work by extending the piers to the 12-foot curve, with dredging between the piers and through the outer bar; in 1867–'68, in accordance with this project, the north pier was extended 128 feet and the south pier 320 feet. This extension of the piers, contrary to expectations, did not remove the difficulty of the bar at the entrance; and in 1867 Maj. J. B. Wheeler presented a project for the further extension of the piers for a distance of about 200 feet on each side, or across the bar lying in front of the entrance to the 12-foot curve beyond the bar. The object hereafter sought to be accomplished was the passage of the outer bar, which, so far, had moved outward with the pier extension.

In 1869–'70 the south pier was advanced 192 feet, and in 1871–'72 the north pier was extended 320 and the south pier 128 linear feet. This extension was thought to have accomplished the object aimed at, and in 1872 Maj. D. C. Houston proposed the com-

pletion of the pier extension by the construction of a pier-head consisting of cribs 50 feet long and 30 feet wide at the outer ends of the extensions of 1871–'72. This work was accomplished in 1872–'73 and 1873–'74. In a *résumé* of the work done and results accomplished Major Houston stated (Report of the Chief of Engineers, 1874, I, page 148): "When the pier extension was commenced there were 17 or 18 feet of water at the present harbor-mouth; now there are only 14½ feet, and outside a bar has formed with but 13 feet. This bar may be removed by some future storm. It seems now that no future extension of the piers will be necessary, but that the bar which may form at the harbor-mouth should be removed by periodical dredging."

The original projects to and including that of 1867 were based on the requirements of commerce at that time, and proposed a depth at the entrance of only 12 feet. Subsequently the increased draft of lake vessels rendered necessary a depth of more than 12 feet; this, in connection with the unexpected bar advance, has necessitated the continuation of about 340 linear feet of pier beyond the length proposed in the project of Maj. J. B. Wheeler.

The harbor has been in process of construction twenty-eight years, and the cost of repairs and maintenance has been necessarily considerable. This, in connection with the unexpected pier advance, has made the entire cost of the improvement exceed its original estimated cost. In the twenty-eight years that the harbor has been under construction the aggregate of the appropriation is $190,448.91, or about $6,800 per year. The number of steamers and sailing-vessels which entered this harbor in 1879 was 1,037, with an aggregate tonnage of 590,579. The value of the exports was more than $2,000,000, and the imports more than $600,000.

With the exceptions of Chicago and Milwaukee, this is the most important harbor on the west shore of Lake Michigan. During the commercial depression occurring between 1873 and 1878 but few lake vessels were built, and these were generally small, with a draft of less than 10 feet. For a number of years past the commerce of the subordinate harbors on Lake Michigan has been transacted by these light-draft vessels, and consequently the demands of commerce have been satisfied with a comparatively shallow depth at the entrance of such harbors. The stimulus which commerce has received during the past few years has resulted in a renewal of ship-building, and vessels of increased tonnage and draft are replacing those of lighter burden.

During the past two years the bar formation at the entrance to the harbor has reduced the depth to less than 12 feet, and during the last season vessels drawing 10 feet would strike on the bar in entering during a heavy sea. To adjust the depth of this harbor to the requirements of navigation, the vessels entering should be considered as drawing 13 feet; 5 feet, at least, should be added to this depth to overcome the effect of the waves, and at the same time leave sufficient water under a vessel's keel to render her steering and management safe. These requirements demand a depth at the entrance of 18 feet. After the entrance is fairly passed this depth need not be maintained, and probably 14 or 15 feet of water would be sufficient. Before proceeding to the consideration of further plans of improvement commensurate with the requirements of commerce, it may be of value to consider the physical changes which have taken place at this harbor and in its immediate vicinity.

Several previous surveys have been co-ordinated, and from the information thereby furnished an effort made to reach conclusions which might be of value in planning further improvements.

The earliest survey was made by Lieuts. A. J. Center and E. Rose in 1836; the second survey, from which information was sought, was made under the direction of Col. J. D. Graham in 1856; the third survey was made in 1865 under the direction of Maj. W. F. Raynolds, superintending engineer of Survey of North and Northwest Lakes; the fourth and last survey was made in July, 1880. These several surveys, in the following discussion, will be designated, for the sake of brevity, by the year in which they were made.

These surveys have been as nearly as possible co-ordinated with the same reference lines and reduced to the same datum.*

A comparison of the positions occupied at the times of the several surveys is made on three lines: the first line is parallel with and 1,000 feet north of the north pier; the second line is about midway between the two piers; and the third line is parallel with and 1,000 feet south of the south pier.

The survey of 1836 did not extend beyond the 18-foot curve. An approximate determination of the position of the curve beyond the 18-foot curve is made in this case by continuing the slope of the lake to the 24-foot curve as it occurs between the 12

*All soundings are reduced to a plane 4 feet below the plane of reference of the Lake Survey (high-water of 1838). The datum plane is 0.5 above the mean level of Lake Michigan for the months of June, July, and August, 1847, and 1.0 below the mean lake level from January, 1860, to January, 1881, and is also 1.2 below the mean lake level for the ordinary season of navigation (April to November, inclusive) from 1860 to 1880, inclusive.

and 18 foot curves. This makes the 24-foot curve of 1836 agree substantially with the position of the 24-foot curves of 1856 and 1865.

The following tables show the advance in feet of the several curves of depths on the three lines previously indicated:

Advance on the line 1,000 *feet north of the north pier.*

	6-foot curve.	12-foot curve.	14-foot curve.	16-foot curve.	18-foot curve.	20-foot curve.	22-foot curve.	24-foot curve.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
From 1836 to 1856	*0.0	*0.0	230	210	190	140	30	0.0
From 1856 to 1865	400	350	190	170	150	50	0.0	0.0
From 1865 to 1880	20	550	280	350	260	190	248	190
From 1836 to 1880	420	900	700	730	600	380	278	190

*There was no change of these curves, owing to the existence of bridge piers.

Advance on the line midway between the piers.

From 1836 to 1856	330	400	310	330	300	150	0.0	0.0
From 1856 to 1865	160	170	230	180	220	160	200	80
From 1865 to 1880	290	600	610	600	510	450	380	210
From 1836 to 1880	780	1,170	1,150	1,110	1,030	760	580	290

Advance on the line 1,000 *feet south of the south pier.*

From 1836 to 1856	140	120	190	120	60	0.0	0.0	0.0
From 1856 to 1865	215	410	380	380	280	210	150	40
From 1865 to 1880	145	410	290	230	220	290	350	200
From 1836 to 1880	500	940	860	730	560	500	500	240

It will be noticed in the above tables that the greatest advance was in the 12-foot curve, the next greatest in the 14-foot curve, and so on in regular succession to the 20-foot curve.

The average advance of the curves on each line has been as follows:

On the line 1,000 feet north of the north pier:

	Feet.
From 1836 to 1856	100
From 1856 to 1865	162
From 1865 to 1880	261
From 1836 to 1880	523

On the line midway between the piers:

From 1836 to 1856	227
From 1856 to 1865	175
From 1865 to 1880	456
From 1836 to 1880	858

On the line 1,000 feet south of the south pier:

From 1836 to 1856	80
From 1856 to 1865	258
From 1865 to 1880	267
From 1836 to 1880	605

The shore-line advance has been as follows:

On the line 1,000 feet north of the north pier:

From 1836 to 1856	30
From 1856 to 1865	125
From 1865 to 1880	110
From 1836 to 1880	265

On the line midway between the piers:

	Feet.
From 1836 to 1856	280
From 1856 to 1865	240
From 1865 to 1880	175
From 1836 to 1880	695

On the line of 1,000 feet south of the south pier:

From 1836 to 1856	——
From 1856 to 1865	180
From 1865 to 1880	130
From 1836 to 1880	310

On the line 1,000 feet north of the north pier the filling over the 12-foot curve of 1836 has been as follows:

	Feet.
From 1836 to 1856	0.0
From 1856 to 1865	4.0
From 1865 to 1880	2.0
From 1836 to 1880	6.0

Over the 18-foot curve of 1836:

From 1836 to 1856	1.5
From 1856 to 1865	1.5
From 1865 to 1880	3.0
From 1836 to 1880	6.0

Over the 24-foot curve of 1836:

From 1836 to 1856	0.0
From 1856 to 1865	0.0
From 1865 to 1880	1.0
From 1836 to 1880	1.0

Average deposit on this line over the points named, 4.3 feet.

On the line midway between the piers the filling over the 12-foot curve of 1836 has been as follows:

	Feet.
From 1836 to 1856	3.5
From 1856 to 1865	1.5
From 1865 to 1880	4.0
From 1836 to 1880	9.0

Over the 18-foot curve of 1836:

From 1836 to 1856	3.5
From 1856 to 1865	3.0
From 1865 to 1880	7.0
From 1836 to 1880	13.5

Over the 24-foot curve of 1836:

From 1836 to 1856	0.0
From 1856 to 1865	0.5
From 1865 to 1880	6.0
From 1836 to 1880	6.5

Average deposit on this line over the points named, 9.7 feet.

On the line 1,000 feet south of the south pier the filling over the 12-foot curve of 1836 has been as follows:

	Feet.
From 1836 to 1856	1.5
From 1856 to 1865	2.5
From 1865 to 1880	2.0
From 1836 to 1880	6.0

Over the 18-foot curve of 1836:

From 1836 to 1856	1.0
From 1856 to 1865	3.5
From 1865 to 1880	4.0
From 1836 to 1880	7.5

Over the 24-foot curve of 1836:

	Feet.
From 1836 to 1856	0.0
From 1856 to 1865	0.5
From 1865 to 1880	3.5
From 1836 to 1880	4.0

Average deposit on this line over the points named, 5.8 feet.

The survey of 1836 was made previous to the existence of any artificial construction, and it is fair to infer that this survey represents the natural condition of the lake bottom in its vicinity. Any great changes which have taken place since 1836 are probably, in some measure, due to the interference of constructions with the equilibrium of nature; and, consequently, in the above tables the changes shown to have taken place should be considered as dating from the beginning of the interference with the natural order of affairs, *i. e.*, at the beginning of the pier extension in 1852. The changes shown to have taken place from 1836 to 1856 should, then, be considered to have taken place between 1852 and 1856.

The extent of shoaling north and south of the piers is not definitely known, since the survey of 1880 extended only 1,000 feet on each side of the piers. The general trend of the present curves of depth leads to the inference that at a distance of from 1,500 to 2,000 feet north of the piers they would coincide with the older curves, and at a distance of probably over 2,000 feet south of the piers.

At least 1,500,000 cubic yards of material have been deposited over the area of the survey since 1836. The character of the deposit is that of fine sand, easily moved under disturbing action. Its unstable character is attested by the difficulty, which has always existed at this harbor, in placing and maintaining cribs in their desired positions. The substratum is clay, and the survey of 1865 demonstrated the natural bottom as clay outside of the 15-foot curve.

The deposit which has produced this general shoaling in the vicinity of Sheboygan Harbor may have been derived from shore drift, produced by the action of storms or littoral currents; or it might be the result of deposits carried into the lake by the Sheboygan River. It seems possible to eliminate from the problem the last supposition by the following considerations:

Sheboygan River has a water-shed of only about 500 square miles, and all of a character to deliver its drainage without any great disturbance of the normal regimen of the river. The river banks are exceedingly stable, and its valley generally lies in a deposit of clay. These considerations would forbid the inference that the river could have borne any considerable quantity of sand into the lake. The survey of 1836 shows that the indefinite discharge of the river had produced the most insignificant indications of deposits about its natural mouth. Consequently the source of supply for these deposits must be ascribed to shore drift and the action of littoral currents.

During a storm the lake surface is subject to oscillations of from 0.5 foot to 1.5 feet. The action of the inner harbor is that of a tidal basin of limited extent, and in the fall of the lake surface, which follows a rise in the oscillations referred to, the current of the river can be seen extending over 2,000 feet obliquely in the lake.

The action of this current would be to check the velocity of sand drift due to littoral currents, and cause a deposition of shore drift in the vicinity of the harbor.

The extension of the piers has practically carried the old river mouth about 1,600 feet further in the lake, and at the same time opened an unrestricted connection between the lake and the river basin, which would be sufficient to account for the change in the action of its currents since 1836.

The piers also act as catchment jetties to the shore drift, which might, but for the piers, pass by undeposited.

The total advance of the 24-foot curve on the line of the pier extension has been 350 feet. The shore line has advanced nearly 700 feet during the same interval; as a result, the average slope of the lake bottom on this line has increased, and consequently must be in unstable equilibrium.

A reference to the foregoing tables shows that the curve advance has been much less rapid than the pier advance; and probably as the piers are carried out into the deeper water the ratio between curve advance and pier advance will diminish. The steep character of the slope of the lake bottom between the 16 and 24 foot curves indicates that these deposits have passed below the general disturbing action of waves.

The extreme pier extension between the dates of the several surveys has been as follows:

	Feet.
From 1836 to 1856	900
From 1856 to 1865	50
From 1865 to 1880	500
From 1836 to 1880	1,450

There seems to be no correlation between these lengths of pier extension and shore or curve advance corresponding with these intervals.

The statements in the foregoing tables must be accepted as approximate, but an earnest effort has been made to make them as accurate as possible. In the coordination of the several surveys it was not always possible to superimpose the different surveys, and consequently some error may exist; still the results are believed to practically represent the real condition existing.

PLANS.

To overcome the difficulties existing at this harbor, two plans suggest themselves, viz:

1. The maintenance of a channel by periodical dredging.
2. The extension of the piers to the deep water beyond the deposit.

Under the first plan, over 60,000 cubic yards of material, at a cost of about $18,000, would have to be removed to give a channel 200 feet wide and 18 feet deep from the end of the present piers to deep water beyond the bar.

This would require a cut about 750 feet in length and of a maximum depth of about 18 feet. From facts previously adduced, the unstable character of the lake bottom can be fairly inferred, and it seems more than probable that an unprotected cut of the above dimensions would refill almost as rapidly as the material was excavated. I do not believe that any valuable amelioration would be obtained by the removal of less than 50,000 cubic yards annually, at a cost of $15,000, which would be equivalent to the interest at 4 per cent. of $375,000.

The alternative plan, by means of pier extension, seems to offer a more probable remedy for the difficulty. As the pier extension is pushed outwards into the deeper water of the lake the catchment capacity of the vicinity increases, and while the analogy of the past indicates an indefinite continuation of the deposits in the future, it also shows that every additional advance of the piers requires a longer interval before the deposits overcome the value of the work done.

As long as the shore drift occurs it is plainly impossible to interpose a barrier to such drift without causing deposits in the vicinity of the barriers.

Between 1865 and 1873 the north pier was extended 548 linear feet, or about at the rate of 61 feet annually. This slow advance of the piers realizes the most possible results from deposits. The necessity of rapid extension of the piers cannot be too strongly urged, both on the grounds of economy and ultimate results.

In the following plans all heights and depths are referred to a datum 4 feet below the plane of reference of the United States Lake Survey, as previously noted.

The plan upon which the estimates are based proposes the extension of the piers, 280 feet apart, from their present termini to the depth of 20 feet, with dredging in the channel between the piers to a depth of 18 feet below datum.

In that portion of the extension which is referred to as pile pier the pier is to consists of two parallel rows of piles placed 19 feet apart between center lines. The piles on the channel side to consist of sawed pine timber 12 inches square, and closely driven, so as to render the piers impervious to the passage of sand. The piles forming the opposite side of the pier will be round and as closely driven as possible. The piles are brought into alignment and secured in position by nails and screw-bolts. At the surface of the water iron tie-rods, 1½ inches in diameter, pass from one side of the pier to the other to prevent the piles from spreading under the thrust of the filling. The piles are to be driven to at least 10 feet below the bottom of the proposed channel, and their tops cut off at 6 feet above datum, and the peir filled with stone.

At some future time, when decay shall render the work necessary, the piles can be cut off at the water surface, and the work surmounted with the ordinary timber superstructure; or the piles can be cut off at the water surface, and immediately surmounted with the timber superstructure; in either case the cost will be practically the same.

The pile pier would be carried over the bar to the present 14-foot curve. From the 14 to the 20 foot curve cribs would be used, placed on stone foundations from 2 to 4 feet in height. The superstructure over the cribs would be carried to a height of 6 feet above datum.

From the end of the pile pier to the 16-foot curve the cribs would be 20 feet wide; and from thence to the 20-foot curve, 24 feet in width.

The dredging for a channel, 18 feet deep and 200 feet wide, from the outer end of the proposed extension to the end of the present extension, would require the removal of 33,000 cubic yards of sand, in place; or, adding 25 per cent. to reduce to scow measurement, 41,250 cubic yards. This would probably be increased to 60,000 cubic yards by deposits during the interval of extension.

The limit of the dredging between the present piers, to be done by the United States, has been assumed to be at a line drawn across the channel and connecting the shore-

line on each side of the piers. The average depth of water between the present piers is 11 feet, and the distance to be dredged 1,200 feet. To give a channel 16 feet deep and 200 feet wide would require the removal of 54,000 cubic yards of sand, measured in place; or, adding 25 per cent. to reduce to scow measurement, 67,000 cubic yards.

The distance that the piers would have to be extended to reach the depth of 20 feet at the time of the completion of the proposed extension is somewhat uncertain; but if it be assumed that at the time of the completion of the proposed extension the 20-foot curve will correspond to the present 24-foot curve, then the distance required for the several parts of the extension will be as follows: From the ends of the present extension to the 14-foot curve, 525 linear feet on the north side, and 560 linear feet on the south; from the 14 to the 16 foot curve, 300 feet on the north and 300 feet on the south side; from the 16 to the 20 foot curve, 150 feet on each side.

The estimated cost is as follows:

1,085 linear feet pile pier, 20 feet wide, at $40	$43,400
600 linear feet crib pier, 20 feet by 20½ feet, at $60	36,000
300 linear feet crib pier, 24 feet by 22½ feet, at $73	21,900
60,000 cubic yards dredging in extended channel, at 30 cents	18,000
67,000 cubic yards dredging in present channel, at 30 cents	20,100
	139,400
Add 10 per cent	13,940
Total	153,340

If, in place of the pile pier, cribs 20 feet wide are used, the estimated cost would be as follows:

1,085 linear feet crib pier, 20 feet by 18½ feet, at $54	$58,590
600 linear feet crib pier, 20 feet by 20½ feet, at $60	36,000
300 linear feet crib pier, 24 feet by 22½ feet, at $73	21,900
60,000 cubic yards dredging in extended channel, at 30 cents	18,000
67,000 cubic yards dredging in present channel, at 30 cents	20,100
	154,590
Add 10 per cent	15,459
Total	170,049

The foregoing estimates do not provide for the maintenance and repairs of existing work during the proposed construction.

Very respectfully, your obedient servant,

L. Y. SCHERMERHORN,
Assistant Engineer.

Maj. HENRY M. ROBERT,
Corps of Engineers, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 51.

HARBOR AT KEWAUNEE, WIS.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Report of survey for a harbor at Kewaunee, Wis.

JANUARY 24, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 21, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers of yesterday's date, and accompanying copy of report from Maj. H. M. Robert, Corps of Engineers, upon a survey for a harbor on Lake Michigan at Kewaunee, Wis., made in compliance with the provisions of the river and harbor act of June 14, 1880.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 20, 1881.

SIR: I have the honor to submit herewith a copy of a report to this office from Maj. H. M. Robert, Corps of Engineers, of the results of a survey made under his direction, to comply with provisions of the river and harbor act of June 14, 1880, for a harbor on Lake Michigan at Kewaunee, Wis.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY FOR A HARBOR ON LAKE MICHIGAN AT KEWAUNEE, WISCONSIN.

UNITED STATES ENGINEER OFFICE,
Milwaukee, Wis., January 12, 1881.

SIR: I have the honor to submit herewith a report and a map of the survey of Kewaunee, Wis.

Under date of July 30, 1880, I was informed by the Chief of Engineers that the Secretary of War had assigned me—

To prepare a plan and advise with the local engineer in the expenditure of such sum as may be appropriated by the local authorities for the improvement of the harbor of Kewaunee, Wis.

As the river and harbor act of June 14, 1880, also contained a provision for a survey "for a harbor on Lake Michigan at Kewaunee, Wis.," which was assigned to me, there appeared a probability that the United States would construct a harbor at that point.

Upon consultation with the local authorities of Kewaunee, I found that there had been raised by taxation about $8,000 for harbor purposes; that they had no engineer, but desired the United States engineer to expend the funds in commencing a harbor; and that they did not expect to raise additional funds, but expected the United States to complete the harbor.

Under these circumstances I could not advise the local authorities to do anything but hold the money until it was decided what the government would do.

As the harbor commissioners were anxious to relieve themselves from any suspicion of lack ot energy or interest in the work, and were also desirous of availing themselves of the facilities afforded by the winter for obtaining timber and stone cheaply, they requested my advice as to how to expend the money this season. I advised them to purchase piles and stone, and some oak timber, according to a bill furnished them, which could be used by the United States in constructing a harbor, if Congress made an appropriation for that purpose. If no appropriation was made there would be as little loss in this way as in any other. The piles and stone would not deteriorate much by keeping, and there would be no money wasted in dredging or construction that would be destroyed before the harbor was available. In a letter—a copy of which is inclosed—their attention was specially called to the fact that the United States was in no way committed to constructing a harbor at this point.

In the meanwhile I had a survey made under the general supervision of Assistant Engineer L. Y. Schermerhorn, whose report is inclosed. His report furnishes the facts required to enable Congress to decide upon the expediency of constructing a harbor at this point.

Lieutenants Center and Rose in 1836 surveyed this harbor, and Mr. Berrien, in his report in 1837 of the survey (Senate Document 175, Twenty-fifth Congress, second session), submits a plan for two parallel piers at the mouth of Kewaunee River, 150 feet apart, and extending to the 14-foot curve.

In 1873 Major Houston made an examination of this harbor, and submitted a plan for two parallel piers, located about 2,000 feet south of he mouth of the river, the piers being 200 feet apart, and extending to

the 18-foot curve. (See Report of the Chief of Engineers for 1873, page 258.) He estimated the cost at $200,000.

I made a personal examination of the locality during the progress of the survey, and there is no question but that Major Houston's location is the proper one. Mr. Berrien, in his report, says:

> The exterior is more unfavorable than usual for improvement. * * * In this neighborhood the bottom is stony, with occasional limestone bowlders of considerable size; further south the bottom is sandy and favorable for excavation.

The recent survey shows that at the southern point, selected by Major Houston, where the river first approaches the lake, the distance across the spit is only 300 feet, and everything is favorable to the construction of a harbor.

The proposed plan is substantially that of Major Houston, and the cost is estimated at $200,000, the same as his estimate. The datum used in this survey is apparently 1 foot lower than that of the lake-survey chart used by Major Houston. This difference of one foot in the datum adds 150 feet of crib piers, and increases largely the dredging. Our datum (which is the one now used for all the harbors under my charge) is 1 foot below the mean level of Lake Michigan for the last 20 years, yet it is not lower than safety requires.

The plan I would propose would be to construct two parallel piers 1,650 feet long each, and 200 feet apart, and extending from the shore line to the 18-foot curve, and located, as shown on the accompanying map, at the point where the Kewaunee River first approaches the lake and turns to the north.

The narrow strip of land between the river and lake, about 300 feet wide, would be cut through to the same width as between the piers, or 200 feet, but the sides of the cut should be docked by the owner of the land, which he is willing to do. The whole channel from the river to the 14-foot curve should be dredged to a depth of 14 feet, while the channel of the river for a distance of 500 feet below the bridge should be widened to 150 feet, with a depth of 12 feet. This basin will provide sufficient room for cribs, scows, dredge, &c., during the construction of the harbor.

The pile piers I should propose to extend to the 12-foot curve, and make them sand-proof by an inside lining to both rows of round piles; this lining consisting of two thicknesses of 3-inch sheet piling, driven with the water-jet, such as has been so successfully used at Sturgeon Bay, Ahnapee, and Two Rivers. At these latter harbors this sheet piling was placed after the piers were built, and consequently had to be put on the outside of the round piles. I should propose at Kewaunee, however, to place the round piles 4 feet apart and place the sheet piling on the inside, so as to be thoroughly protected from blows from vessels and from ice. As the pile piers would be thoroughly sand-tight by this plan, I should propose to partly fill them with the material dredged from the channel, covering it with a layer of 3 or 4 feet of stone. This stone can be added to from time to time, as found necessary, though it would not be necessary if the sheet piling is put down as well as at Ahnapee or Sturgeon Bay. To be on the extreme side of safety in the estimate, provision is made for filling the pile piers completely with stone in the end. If the additional stone is not required there will be a saving of $13,000 in this item.

From the 12-foot curve outward, I would propose to use the ordinary cribs, 20 feet wide, except the last two on each pier, which would be 24 feet wide.

The estimated cost of the plan is as follows:

2,000 feet of pile pier, at $27 per foot	$54,000
1,100 feet of crib pier, 20 feet wide, at $54 per foot	59,400
200 linear feet of crib pier, 24 feet wide, at $68 per foot	13,600
200,000 cubic yards dredging, at 28 cents	56,000
Contingencies	17,000
Total	200,000

It is difficult to judiciously expend a small sum in commencing a work of this nature. One-third of the entire amount could be profitably expended the first year.

The report of Assistant Engineer L. Y. Schermerhorn is inclosed, and the map of the survey is sent by mail in a separate package.

Very respectfully, your obedient servant,

HENRY M. ROBERT,
Major of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

LETTER TO THE KEWAUNEE HARBOR COMMISSIONERS.

UNITED STATES ENGINEER OFFICE,
Milwaukee, Wis., November 24, 1880.

GENTLEMEN: The plan of improvement at Kewaunee, which will form the basis of my recommendations to the Chief of Engineers, proposes the extension of piers 200 feet apart from the shore-line to about the natural depth of 18 feet, and the dredging of a channel to connect the lake with the river. That part of the extension lying between the shore-line and the natural depth of 12 feet will consist of modified pile piers, having a length on each side of 1,000 linear feet.

In relation to the application of the funds, which the town of Kewaunee proposes to apply in aid of the harbor improvement, my judgment is that the funds would accomplish the best results if invested in such material as would be first required, in case Congress should make the necessary appropriations for commencing and carrying on the work.

The first work which would be undertaken under an appropriation of Congress would be the construction of the pile piers previously referred to. The 2,000 linear feet of pile pier would require, as a part of the material for its construction, 1,000 piles, each 32 feet in length; 62,000 feet, board measure, white-oak timber; and 1,000 cords of stone for pier filling. The estimated cost of this material is from $7,500 to $8,000.

This, I believe, is nearly the amount of funds you have as applicable to the aid of harbor improvement.

I would recommend that you purchase and hold the before-named quantities of material for application to the harbor improvement when Congress shall have made the necessary appropriation for commencing the work.

I transmit herewith such general specifications and description of the material as will enable intelligent action on your part.

In making the foregoing recommendation, it must be understood that the government does not thereby, in any way, stand committed to an appropriation for this work. My recommendation to the Chief of Engineers will be in favor of the improvement; beyond this the matter is in the hands of Congress. You incur an element of risk in purchasing material, the use of which is based on the assumed action of Congress. Upon this question you must exercise your own judgment, and be prepared for whatever results may follow.

Very respectfully, your obedient servant,

HENRY M. ROBERT,
Major of Engineers.

KEWAUNEE HARBOR COMMISSIONERS:
JOSEPH DUVAL, *President.*
J. CAREL, *Secretary.*

REPORT OF MR. L. Y. SCHERMERHORN, ASSISTANT ENGINEER.

MILWAUKEE, WIS., *December* 31, 1880.

SIR: I have the honor to submit the following report on Kewaunee Harbor, Wisconsin:

A detailed survey of this harbor was made in August, 1880, and the following plans and estimates are based upon its results:

The harbor and village of Kewaunee are situated in Kewaunee County, Wisconsin, and at the mouth of the Kewaunee River.

In relation to adjacent harbors, Kewaunee is 30 miles north of Manitowoc Harbor, 24 miles north of Two Rivers Harbor, 12 miles south of Ahnapee Harbor, 27 miles south of Harbor of Refuge at entrance of Sturgeon Bay Canal, Wisconsin.

About 300 square miles of adjacent country finds outlet for its products at Kewaunee. Until recently the exports consisted of hemlock bark, ties, wood, and timber, but at present the cultivation of the cleared lands result in the products of agriculture, and with the change the importations which naturally follow. The change, and the character of past and present exports, will be seen in the appended tables of commercial statistics, from which it appears that in 1872, with the exception of 2,000 barrels of flour, the exports consisted entirely of timber products, while in 1879 there were shipped 63,000 bushels of grain, 8,600 barrels of flour, 45,000 pounds of cheese, 60,000 pounds of pork; while the imports for the same year indicate increased prosperity.

The present commerce of the harbor is transacted over the bridge piers. The exposed position of these piers make landing thereat only possible during fair weather, and their limited storage capacity renders them unsuitable, except for small shipments made at quite regular intervals. The facilities furnished by these bridge piers probably met the requirements of the past commerce of Kewaunee, but to properly receive and ship its present imports and exports warehouses and docks are required. These can only be obtained by opening communication between the lake and river, thereby forming an inner harbor.

Kewaunee River drains about 150 square miles, and it is not subject to serious freshets. In the immediate vicinity of the mouth it is flanked by broad areas of swamplands. The river proper has a width of from 200 to 300 feet, with a mid-channel about 50 feet wide, having a depth of 12 feet. The natural bed of the river is clay to at least a depth of 16 feet below water surface, while superimposed on the clay is several feet of soft, river mud, mixed with drift-wood and logs; six miles above the mouth of the river rapids occur; up to this point the river is very tortuous, but preserves a narrow channel with not less than 10 feet depth. The river approaches the lake until within 300 feet, when it abruptly turns to the north and flows nearly parallel with the shore of the lake, discharging at a point 2,000 feet north of its first approach. The width of the river at its mouth was, at the time of the survey, 25 feet, and the depth about 2 feet.

During severe gales a bar is formed, closing the river mouth until the accumulation of river water reopens it. Directly in front of the mouth, and to the north of the north bridge-pier, a very dangerous reef exists, upon which, at a distance of 2,000 feet from the shore, there is less than 10 feet of water. This reef consists of large bowlders, and is probably the detritus from a bold point which at some past time extended into the lake.

The most desirable point at which to effect a junction of the lake and river seems to be at the first place of approach, previously mentioned; this would locate the entrance between the two existing bridge-piers, and on a line where the deep-water curves of the lake are least removed from the shore-line.

The distance out to the various curves are as follows:

	Feet.
To the 4-foot curve	125
To the 6-foot curve	250
To the 8-foot curve	550
To the 10-foot curve	800
To the 12-foot curve	1,000
To the 14-foot curve	1,200
To the 16-foot curve	1,425
To the 18-foot curve	1,600
To the 20-foot curve	1,750

NOTE.—All statements of height or depth are referred to datum, which is the assumed plane of low-water; *i. e.*, a plane 4 feet below the plane of reference of the United States Lake Survey, and five-tenths of a foot above the low-water mark of 1847.

At this point the lake bottom is free from the obstructions which cover the bottom in front of the natural mouth of the river. Borings indicate that to a depth of at

least 20 feet below datum the lake bed is composed of clay free from bowlders. This is further established by the construction of the bridge-piers on either side of the proposed location. These piers consist of rows of piles quite closely placed, and driven to a depth of from 15 to 30 feet below the water surface. The only criticism made of the character of the bottom as derived from the construction of the piers was that the piles were driven so easily that they would not admit of heavy loading.

The lake banks and bottom in the vicinity of Kewaunee are very free from sand, consequently the vitiation of an improved entrance, from sand-drift, would be small. The freedom of the river from freshets, and the character of its bottom, will likewise prevent the formation of bars, due to river scour, between the proposed piers. The stable character of the lake and river bottom seems to promise the maintenance of an improved channel.

In obtaining an entrance from the lake to the river, on the lines previously indicated, a cut would have to be made through a strip of intervening land about 300 feet in width. The elevation of this ground is from 2 to 8 feet above datum.

The general plan upon which estimates have been based is as follows:

1. The excavation and revetment of a cut 200 feet in width through the land at present separating the lake and river.

2. The extension of parallel piers, 200 feet apart, from the shore into the lake for a distance of 1,600 feet, or to the natural curve of 18 feet.

3. The removal by dredging of all material between the piers and between the sides of the revetted cut to a depth of 14 feet below datum, and for a width of 200 feet.

4. The widening, by dredging, of the present narrow channel in the river to a width of 150 feet, and extending from the present highway bridge to a point 500 feet below. The depth of this widened channel to be 12 feet below datum.

The general methods of construction upon which the estimates are based are as follows:

1. The revetment for the land cut consists of a row of round piles driven along the front line of revetment. These piles are placed 6 feet apart between centers and anchored by 1½-inch tie-rods to a back row of piles placed parallel with and 10 feet from the front row. The anchor piles are placed 12 feet apart between centers. The front row of piles are provided with suitable cap, wale, and fender pieces, which give support to a double row of sheet piles, placed so as to render the revetment sand-tight.

2. The piers extending from the lake shore to the 12-foot curve, a distance of 1,000 feet, consist of two parallel rows of round piles, 16 feet apart between lines, the piles in each line being 4 feet between centers. Each line of piles to be brought into alignment and secured by wales and screw bolts.

At intervals of 10 feet iron tie-rods, 1½ inches in diameter, pass at the surface of the water from one line of piles to the other to secure the two lines from spreading when subjected to the thrust of filling. On the inner side of each row of piles is placed a double line of sheet piling, consisting of 3-inch pine plank, secured by wales and screw bolts to the round piles. The lower part of the sheet piles to receive support from a sill imposed against the round piles and placed at least 8 feet below datum. The round and sheet piles to be cut off at 6 feet above datum, so as to provide the necessary superstructure to the piers. The round piles to be provided with wales at the surface of the water, so that when the decay of the piles above the water makes repair of the superstructure necessary, the work can be cut down to the water surface and surmounted with timber superstructure.

The sheet piles to be placed by the aid of the water-jet, and to be made thoroughly sand-tight.

The round piles to be driven to at least a depth of 10 feet, and the sheet piles to a depth of 2 feet below the proposed bottom of the excavated channel.

It is believed that this method of construction will permit the usual stone filling to be dispensed with except the top 4 feet; and in place thereof the pier filled with material dredged from the channel along the side of the pile piers. Should it seem inexpedient to fill the piers with dredged material, instead of the ordinary pier filling, the foregoing method of construction can be modified as follows: The piles along the channel side of the pier may be placed 4 feet apart between centers and provided with a sand-tight lining of sheet piling, as previously described. The outer side of the pile pier to consist of round piles closely driven, as in the ordinary pile pier. The piles to be cut off 6 feet above datum, provided with wales and tie-rods as in the previously described plan, and the whole pier filled with stone. The appended estimates provide for either plan.

In the extension of the piers from the 12-foot to the 18-foot curve, a distance of 600 feet, the ordinary crib substructure and superstructure filled with stone has been adopted.

In the extension of the piers from the shore-line to the 12-foot curve constructive requirements strongly urge the use of the pile pier or some modification thereof. The ordinary pile pier as constructed in the past allows the passage of sand quite freely from the outside into the deeper channel between the piers, quickly obliterating the results

of dredging. To obviate this defect it has been necessary to render the pile piers of the past sand-tight by some subsequent device; and while pile piers become a constructive necessity in shallow water, experience indicates the advantages of such modification as will render them sand-tight from the beginning. The results obtained from work at Two Rivers, Ahnapee, and Sturgeon Bay, Wisconsin, prove that they can be rendered sand-tight by sheet piling properly placed.

The question of pier filling seems worthy of some consideration, and the following facts are submitted in regard thereto. For the harbors along the west shore of Lake Michigan, from at least Port Washington to the Harbor of Refuge at entrance of the Sturgeon Bay Canal, the lake shore has been relied upon largely for furnishing the stone required for pier filling. To accomplish this over 120 miles of continuous shore has been laid under tribute. As a result the supply has been seriously reduced, and the shore-line in many places robbed of its natural protection against the erosive action of the waves, has made serious inroads into the adjacent clay, gravel, and sand-banks, adding largely to the shore drift, and injuriously disturbing the equilibrium of the shore-line.

When any considerable demand for stone occurs, delay results if the shore lines are still depended upon, or a largely added expense if inland quarries are made the source of supply. The difficulty in obtaining promptly and certainly the requisite quantity of stone has become so great that it renders uncertain all anticipations and estimates.

These facts, imperfectly elaborated, seem to justify the consideration of other material than stone for pier filling. The stone now used has a specific gravity of about 2.72, or a weight of 170 pounds per cubic foot; when this stone is ordinarily piled a cord of 128 feet will weigh 13,000 pounds, or 101 pounds per cubic foot, showing a loss of weight from void spaces of 40 per cent. In crib filling, the side walls, transverse and longitudinal ties all tend to increase the void spaces, so that practically the loss of weight due to void spaces is even greater than 40 per cent. An average cubic foot of crib filling then displaces .6 of a cubic foot of water, and consequently has its weight, when immersed, reduced to 64 pounds. This, then, is the value of a cubic foot of stone filling in giving stability to the structure. Dry sand or gravel weighs about 98 pounds, and compacted clay about 120 pounds per cubic foot. A cubic foot of sand or gravel contains about the same void space as a cubic foot of stone. The weight, then, of a cubic foot of sand or gravel, when immersed, would be 59 pounds, or 92 per cent. of the weight of the stone when immersed. With clay, allowing no void spaces, the weight of a cubic foot, when immersed, would be 58 pounds,or about 91 per cent. of the weight of stone filling. This deficiency of less than 10 per cent. in the weight of sand, gravel, or clay could be overcome by simply giving the modified pile piers a slightly increased width.

The use of earth filling, then, reduces itself to the question of rendering the sheet piling sufficiently tight to safely retain the earth filling. By the aid of the water-jet I believe it can be done. With clay as a filling this difficulty would entirely disappear. The channel, which would require dredging at Kewaunee, will furnish clay, and if the plan be considered feasible, the filling for the modified pile pier could be obtained at less expense than would arise from discharging the dredged material into the lake.

The following estimate is based on the foregoing described plans:

	Cubic yards.
Excavation of cut from lake shore to river, width 200 feet, depth 14 feet below datum	63,300
Excavation of channel between piers, width 200 feet, depth 14 feet below datum	73,700
Excavation of river channel, length 500 feet, width 150 feet, depth 12 feet below datum	18,500
Excavation, additional, due to change of bottom, and deposit	44,500
Aggregate	200,000

200,000 cubic yards dredging, at 28 cents	$56,000
2,000 linear feet pile pier filled with stone, at $28	56,000
500 linear feet crib pier, 50 feet by 20 feet by 18½ feet, at $52	26,000
600 linear feet crib pier, 50 feet by 20 feet by 20½ feet, at $57	34,200
200 linear feet crib pier, 50 feet by 24 feet by 22½ feet, at $68	13,600
Total	185,800
Add 10 per cent. for contingencies	18,580
Aggregate	204,380

If the 2,000 linear feet of pile pier is filled with dredged material instead of stone the above estimate will be reduced to $187,330.

Six hundred linear feet of revetment at $7.30 would cost $4,380, the estimated cost of revetting the sides of the cut between the lake shore and the river, which has not been included in the above estimate, since this work properly belongs to the improvement of private property.

If the piers were extended to the 16-foot curve and the dredging reduced to 12 feet below datum, in place of 14 feet, the above estimate would be reduced to $168,000.

In the foregoing estimates 25 per cent. was added to the measurement of excavation in place, so as to represent the quantities by scow measurement.

In 1836 Lieuts. A. J. Center and E. Rose, U. S. A., made a survey and report on the improvement of the mouth of Kewaunee River. The plan proposed was the extension of parallel piers 150 feet apart, and extending from the natural outlet of the river to about the 13-foot curve. The estimated cost of the proposed improvement was $97,195. At the time of this survey the importance of the improvement was supposed to "arise from its position with respect to the important settlements on Fox River, as a communication between Kewaunee and the mouth of Fox River (Green Bay) would dispense with the long and somewhat dangerous navigation around the peninsula of Green Bay." The report and map of the survey were published in Senate document 175, Twenty-fifth Congress, second session.

In 1873 Maj. D. C. Houston made an examination and report on this harbor. (Report of the Chief of Engineers, 1873, page 258.) The plan of improvement upon which the estimate was based proposed two parallel piers 200 feet apart, extending to the 18-foot curve. The location of the piers was substantially the same as that proposed in the present plan. The estimated cost of the entire improvement was $200,000. The conclusion of Major Houston was that "the local business is not sufficiently great to make the improvement of this harbor a benefit to the general commerce of the country, and * * * in view of the incomplete condition of other harbors in this part of the lake, it would seem more judicious to appropriate money for their completion so as to make them available for the general security of navigation than to undertake new work not imperatively demanded."

Very respectfully, your obedient servant,

L. Y. SCHERMERHORN,
Assistant Engineer.

Maj. HENRY M. ROBERT,
Corps of Engineers, U. S. A.

COMMERCIAL STATISTICS.

Name of harbor, Kewaunee, Wisconsin; collection district, Milwaukee, Wis.; nearest light-house, Twin River Point.

Arrivals and departures of vessels during the year ending December 31, 1880.

	Arrivals.			Departures.		
	No.	Tonnage.	Crews.	No.	Tonnage.	Crews.
Steamers	151	90, 600	3, 926	151	90, 600	3, 926
Sailing vessels	134	17, 420	938	134	17, 420	938
Totals	285	108, 020	4, 864	285	108, 020	4, 864

EXPORTS FOR THE YEARS ENDING DECEMBER 31, 1872 AND 1879.

Articles.		1872.	1879.
Grain	bushels	.....	63, 000
Flour	barrels	2, 000	8, 600
Butter	pounds	.....	3, 300
Cheese	do	.....	45, 000
Eggs	dozen	.....	18, 000
Pork	pounds	.....	60, 000
Farm produce	value	.....	5, 000
Boots and shoes	pounds	.....	102, 000
Beer	barrels	.....	720
Mill-feed	pounds	.....	190, 000
Railroad ties	number	150, 000	223, 421
Posts	do	200, 000	22, 000
Cord wood	cords	7, 000	2, 557
Hemlock bark	do	5, 000	5. 665
Lumber	feet B. M.	11, 000, 000	3, 870, 000
Shingles	thousand	3, 000	9, 000
Telegraph poles	number	3, 000	.....

IMPORTS FOR THE YEAR ENDING DECEMBER 31, 1879.

Dry goods	pounds..	220,000
Groceries	do....	517,000
Boots and shoes	do....	281,000
Leather	do....	24,217
General merchandise	do....	103,000
Salt	do....	242,000
Iron and steel	do....	812,000
Nails	do....	95,000
Hardware	do....	105,000
Coal	tons...	50
Stoves	number..	145
Doors	do....	350
Windows	do....	1,030
Oil	barrels..	220
Beer	do....	120
Whisky	do....	200
Apples	do....	925
Corn	bushels..	10,000
Staves	cars..	8

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 52.

SPECIAL ESTIMATES FOR RIVERS.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Special estimates for the improvement of certain rivers.

JANUARY 24, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 21, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers of yesterday's date, in which he refers to his last annual report, and submits special estimates for the following works for the fiscal year ending June 30, 1882:

For continuing improvement of entrance to Yaquina Bay, Oregon, $25,000.

For continuing improvement of mouth of Coquille River, Oregon, $10,000.

For continuing improvement of Cowlitz River, Washington Territory, $2,000.

And for building, equipping, and running a snag-boat for use on the Skagit, Nooksack, Stillaquamish, Snohomish, and other rivers in Washington Territory, $25,000.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 20, 1881.

SIR: In the annual report of this office for the fiscal year ending June 30, 1880, it was stated, with reference to the application of the appropriations already available for the improvement of entrance to Yaquina

Bay and mouth of Coquille River, Oregon, and of Cowlitz and Skagit rivers, Washington Territory, that estimates for the prosecution of these works would be made the subject of a special report after the results of examinations and surveys then in progress had been received.

These examinations having been made and plans for the prosecution of the work adopted, I beg leave to submit the following estimates which Maj. G. L. Gillespie, Corps of Engineers, the officer in charge, makes for the fiscal year ending June 30, 1882, viz:

For continuing improvement of entrance to Yaquina Bay, Oregon	$25,000
For continuing improvement of mouth of Coquille River, Oregon	10,000
For continuing improvement of Cowlitz River, Washington Territory	2,000

And in connection with a further appropriation for the improvement of Skagit River, Washington Territory, Major Gillespie suggests as advisable, in view of the growing commerce of the country bordering on Puget Sound, that an appropriation be made for building, equipping, and running a snag-boat for removing snags and other obstructions in the Skagit, Nooksack, Stillaquamish, Snohomish, and other rivers in Washington Territory, $25,000.

The views of Major Gillespie are concurred in, and I have respectfully to recommend that these estimates may be forwarded to the Speaker of the House of Representatives for the information of the Committee on Commerce.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

BUFFALO BAYOU, TEXAS.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Report of survey of Buffalo Bayou, Texas.

JANUARY 24, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 22, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers of yesterday's date, and accompanying copy of report from Maj. S. M. Mansfield, Corps of Engineers, upon an examinaton of Buffalo Bayou, Texas, from Simm's Bayou to the mouth of White Oak Bayou at Houston, made in compliance with the provisions of the river and harbor act of June 14, 1880.

ALEX. RAMSAY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 21, 1881.

SIR: I have the honor to submit herewith a copy of a report to this office from Maj. S. M. Mansfield, Corps of Engineers, of the results of an examination of Buffalo Bayou, Texas, from Simm's Bayou to the mouth of White Oak Bayou at Houston, made under his direction, to comply with requirements of the river and harbor act of June 14, 1880.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

EXAMINATION OF BUFFALO BAYOU, TEXAS, FROM SIMM'S BAYOU TO THE MOUTH OF WHITE OAK BAYOU AT HOUSTON.

UNITED STATES ENGINEER OFFICE,
Galveston, Tex., January 10, 1880.

GENERAL: I have the honor to transmit herewith a report of the examination of Buffalo Bayou, Texas, from Simm's Bayou to the mouth of White Oak Bayou at Houston, made in accordance with the provisions of section 2 of act of Congress approved June 14, 1880.

The examination was made by Assistant Engineer Mr. R. B. Talfor, and his report, entire, is submitted herewith, with map and cross-sections.

A survey of this bayou was made by Lieut. (now Captain) H. M. Adams, Corps of Engineers, under Major Howell's direction, in December, 1870, and January, 1871, report of which may be found on page 534, Report of Chief of Engineers for 1871.

Mr. Talfor was directed to cross-section the bayou at nearly the same places as had been done by Lieutenant Adams, with a view to a comparison and determination of changes. We have been unable to determine Lieutenant Adams's plane of reference; we show, however, that some important changes have occurred, and can approximate very nearly to the exact amount.

For 3 or 4 miles below the city of Houston the banks range from 20 to 45 feet in height, and at some points are very bluff, with a tendency to caving during high-water.

The narrowness and tortuousness of the bayou for this distance, with its sharp bends, are the most serious obstructions to its navigation.

For a channel 12 feet deep and 100 feet wide the following estimate is submitted:

Excavation, 1,313,130 cubic yards, at 25 cents	$328,282 50
Sheet piling, 7,900 feet, at $2.50	19,750 00
Removing overhanging trees	2,240 00
Contingencies, 10 per cent	35,027 25
Total	385,299 75

For a channel 12 feet deep and 150 feet wide:

Excavation 4,004,190 cubic yards, at 25 cents	$1,001,047 50
Sheet piling, 7,900 feet, at $2.50	19,750 00
Removing overhanging trees	2,240 00
	1,023,037 50
Contingencies, 10 per cent	102,303 75
Total	1,125,341 25

Mr. G. W. Kidd, secretary of the Houston Cotton Exchange and Board of Trade, has kindly furnished the following statistics, viz:

1. Extract from report of special committee of city council, February 16, 1880, giving statistics respecting the commerce of Buffalo Bayou and the city of Houston.
2. Houston cotton movement.
3. Houston and Texas Central Railway business.
4. Houston Direct Navigation Company and its business.
5. Trade relations with New Orleans and New York.
6. Houston population, trade, manufactures, public institutions, &c.

Very respectfully, your obedient servant,

S. M. MANSFIELD,
Major of Engineers, Bvt. Lieut. Col., U. S. A.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. R. B. TALFOR, ASSISTANT ENGINEER.

GALVESTON, TEX., *December* 24, 1880.

SIR: I have the honor to submit the following report of an examination of Buffalo Bayou, Texas, from Simm's Bayou to the mouth of White Oak Bayou at Houston.

INSTRUCTIONS.

October 21, I received verbal orders from Capt. C. E. L. B. Davis, Corps of Engineers, U. S. A., to run a compass and stadia line, and to cross-section the bayou as near as possible over the same lines as shown on a chart of Buffalo Bayou made under the direction of Capt. C. W. Howell by Lieut. H. M. Adams, United States Engineers, in December, 1870, and January, 1871, to determine what amount of shoaling had taken place since that date; also to give estimates for a ship channel 100 feet and 150 feet wide and 12 feet deep.

* * * * * * *

DESCRIPTION.

Buffalo Bayou, above its junction with White Oak Bayou at Houston, is unnavigable, the width and depth being reduced to the minimum (see chart), but below this point it is navigable for boats drawing from 5 to 6 feet of water. For 3 or 4 miles below the city of Houston the banks range from 20 to 45 feet in height, and at some points are very bluff, with a tendency to caving during high-water. The narrowness and tortuousness of the bayou for this distance, with its sharp bends, are the most serious obstructions to its navigation.

It is a tide-water stream emptying into the San Jacinto River at Lynchburg, about 25 miles below Houston. At Clinton, the present terminus of the Morgan's steamship line, a portion of the banks has been excavated and the channel dredged to enable their large steamers to turn there. (See chart).

Simm's Bayou debouches into Buffalo Bayou about one-fourth of a mile below. No perceptible current was observed out of it. For a further description of the bayou below Clinton I would respectfully refer to Lieutenant Adams's report of 1871.

* * * * * * *

The banks at Clinton are from 10 to 20 feet high, gradually increasing in height as they recede from the bayou, and are composed of a yellow clay mixed with sand and loam. Very little if any caving occurs till within one-half mile below Harrisburg, where the right bank appears to be composed of the same material, but with an excess of sand in the underlying stratum causing it to undermine during high-water. From Harrisburg to cross-section No. 31 the banks appear to be stable, no indications of caving or sliding being observed. Above this point four land slides have occurred, narrowing the channel; the most notable one is shown at section No. 20, the width of the bayou above and below this point being 123 and 138 feet, respectively.

The chart of 1871 gives the width of section No. 20 as 96 feet; its present width is only 65 feet.

Overhanging trees, consisting of oak, cottonwood, a few pine, and magnolias, line the banks, with but few open spaces from Simm's Bayou to within 2 miles of Houston. From there the left bank to Houston is clear, with the exception of that portion embraced between cross-sections No. 8 and No. 12. (See chart.)

At Houston, and for about 5 miles down stream, the banks are composed of a blue and yellow clay with sand mixed, the underlying stratum being of a hard blue clay, and are from 15 to 45 feet high, being quite bluff as you approach Houston. The caving of the banks (excepting the conditions mentioned above) is due in a great measure to their denudation of timber and their cultivation; the heavy rains washing the surface soil causing great fissures or ravines in the banks. The cause of caving is especially noticeable at section No. 20, where the land slide (as mentioned above) was due to the gullies at its upper and lower extremities and percolation through the layers of sand. The combined effect of these causes is, that large quantities of earth are washed into the bayou during the prevalence of heavy rains and floods. Wherever the bayou shoals above the depth required for the Houston Direct Navigation Company's barges, it is dredged by that company.

COMPARISONS.

A table of comparisons of the sections made in 1870 and 1871, and November, 1880, shows that the average area of section of the bayou has increased in width and depth; from 2 to 43 feet in width, and from $\frac{3}{4}$ of a foot to $5\frac{1}{2}$ feet in depth. Their extremes are shown in the table at sections Nos. 7 and 21 for width, and sections Nos. 6 and 35 for depth. A narrowing of area from 2 to 31 feet is shown at sections Nos. 20 and 34. The 31 feet narrowing being at the land slide already mentioned at section No. 20. A shoaling from 1 to $3\frac{1}{2}$ feet is observed at a few of the sections.

The above comparisons of sections taken would indicate that the plane of reference of 1871 was taken lower than the one established during the time of this survey.

PROPOSED IMPROVEMENT.

For a channel 100 feet wide and 12 feet deep between Houston and Clinton, the amount of material to be excavated is 1,313,130 cubic yards.

That portion of the bayou requiring the greatest amount of dredging is located between Houston and cross-section No. 22 (3 miles below), where the quantity to be taken out is 756,325 cubic yards against 556,805 cubic yards for the remaining 8 miles to be improved.

For a channel 150 feet wide and 12 feet deep, the amounts to be excavated over the same sections as mentioned above are, respectively, 1,685,875 cubic yards for the 3 miles and 2,318,315 cubic yards for the remaining 8 miles.

The upper portion of the bayou near Houston being narrow, with high banks, will necessitate an extra moving of the material dredged for a channel 150 by 12 feet, but for a channel 100 by 12 feet one movement will be obtained by the use of a steam derrick, such as is now used by the Houston Direct Navigation Company, which has a boom 85 feet long with a swing of 75 feet clear from the center of the derrick. As all the excavated material will have to be deposited on the banks, the stumps of the trees that have been removed will greatly assist in preventing the material from sliding back and holding together the levee thus formed.

Wherever a tendency to caving of the banks is observed, a revetment of sheet piling will be required; that being in use now, and put in by the Houston Direct Navigation Company, at a few points near Houston, the cost of which, with other information, was kindly rendered by Capt. J. J. Atkinson, is as follows:

Piling of Calcasieu or Sabine pine 12 inches diameter by 25 feet long, 4-inch by 8-inch stringers, cap 4 inches by 12 inches, sheeting 2 inches by 12 inches. Total cost per running foot, $2.50. The cost of the piling could be greatly reduced, as the overhanging trees to be removed could be utilized for this purpose.

ESTIMATES FOR A 100-FOOT CHANNEL BETWEEN SIMM'S AND WHITE OAK BAYOUS.

Excavating 1,313,130 cubic yards, at 25 cents	$328,282 50
7,900 linear feet sheet piling, at $2.50	19,750 00
Removing overhanging trees, 11.2 miles, at $200	2,240 00
	350,272 50
Add 10 per cent. for contingencies	35,027 25
Total cost	385,299 75

FOR A CHANNEL 150 FEET WIDE AND 12 FEET DEEP.

Excavating 4,004,190 cubic yards, at 25 cents	$1,001,047 50
7,900 linear feet sheet piling, at $2.50	19,750 00
Removing overhanging trees 11.2 miles, at $200	2,240 00
	1,023,037 50
Add 10 per cent. for contingencies	102,303 75
Total cost	1,125,341 25

From the above estimates of cost, and from conversations had with a delegation of the merchants of Houston, who called on me while at their city, and the statistics furnished by them and their different corporations, I am led to believe that a channel 100 feet wide and 12 feet deep would answer all the requirements of their trade for some years to come.

The steamships (Morgan's) that are now engaged in the bayou trade, whose present terminus is at Clinton, rarely ever draw more than 9 feet of water. This width will not allow of these steamers passing. An enlargement of cross-section of the bayou at one or two points between Harrisburg and Houston for turnouts would obviate this difficulty.

* * * * * * *

CONCLUSIONS.

The above estimates are approximate, but I think are within the limit and could be greatly reduced by the engineer in charge of the work of improvement, in taking advantage of those portions of the bayou where the height of one bank is greatly in excess of the opposite one, and making the cut on the lowest bank.

Very respectfully, your obedient servant,

R. B. TALFOR,
United States Assistant Engineer.

Maj. S. M. MANSFIELD,
Corps of Engineers, U. S. A.

EXTRACT FROM REPORT OF SPECIAL COMMITTEE OF CITY COUNCIL, FEBRUARY 16, 1880, GIVING STATISTICS RESPECTING THE COMMERCE OF BUFFALO BAYOU AND THE CITY OF HOUSTON.

The freight and tonnage which have passed through this tide-water improvement to and from Clinton, since it has been completed to that point, are as follows, as shown in Schedules A and B:

SCHEDULE A.—TEXAS TRANSPORTATION COMPANY SHIPMENTS FROM OCTOBER 1, 1877, TO SEPTEMBER 30, 1878.

	Pounds.
110,768 bales cotton	55,393,000
Bales hides and skins	3,114,000
Bales and sacks wool	1,292,000
819 sheep and hogs	67,425
6,728 other animals	5,640,000
Hog product	2,516,000
Grain	2,234,050
All other merchandise	28,316,000
Total in pounds shipped	98,572,475

SHIPMENTS FROM OCTOBER 1, 1878, TO SEPTEMBER 31, 1879.

	Pounds.
95,481 bales cotton	47,740,500
Bales hides and skins	1,459,500
Bales and sacks wool	1,501,750
766 sheep and hogs	79,200
7,818 other animals	7,820,000
Hog product	2,565,500
Flour	432,000
Grain	234,140
All other merchandise	31,276,000
Total number of pounds shipped	93,108,590
Grand total in pounds shipped for the two years	191,681,065

SCHEDULE B.—TRIPS MADE BY STEAMSHIPS TO CLINTON FROM NEW ORLEANS AND MORGAN CITY, PHILADELPHIA, AND NEW YORK.

	Tons.
1876—Forty-seven round trips, New Orleans and Morgan City	49,350
1877—Two hundred and six round trips, New Orleans and Morgan City	216,300
1878—Two hundred and twenty-three round trips, New Orleans and Morgan City	234,150
1879—Two hundred and twenty-six round trips, New Orleans and Morgan City	237 300
1878—One round trip, Philadelphia direct through	1,900
1878—Thirteen round trips, New York direct, lightered	29,250
1879—Eleven round trips, New York direct, lightered	24,750
Total tonnage, as above	743,650

Communication with New Orleans and Morgan City was closed during the following periods: 1878, July 25 to November 18; 1879, July 23 to November 18.

With the increased depth of navigation to 12 feet, which is now being so rapidly done, as shown before, the commerce over the line of this improvement will soon assume much larger proportions. * * *

The important results already accomplished by the progress of this improvement demonstrates the public necessity of extending it to Houston, as contemplated and intended when first inaugurated. The terminal facilities offered by the nine railways that now diverge from Houston necessarily make it the great distributing point for the commerce of the Southwest. The magnitude of the freight and commerce concentrating at Houston from 1869 to 1879, inclusive, as shown by the following statements, reveals some very prominent facts.

STATEMENT OF THE MOVEMENT OF COTTON COASTWARD UPON THE LINE OF THE HOUSTON AND TEXAS CENTRAL RAILWAY FOR TEN YEARS ENDING AUGUST 31, 1879.

	Bales cotton.
1869	158,225
1870	207,374
1871	109,486
1872	195,735
1873	255,781
1874	211,738
1875	306,873
1876	293,044
1877	302,993
1878	404,382
1879 (five months commencing September 1)	286,417
Total for ten years, bales	2,732,048

Being 1,366,019,000 pounds.

STATEMENT OF THE INTERNATIONAL AND GREAT NORTHERN RAILROAD COMPANY, BEING FOR THE YEARS 1875 TO 1879 INCLUSIVE, THE PREVIOUS YEARS BEING UNATTAINABLE.

	Bales cotton.
1875	122,402
1876	175,768
1877	154,640
1878	179,251
1879	216,020
Total	848,041

TEXAS WESTERN RAILWAY.

	Bales cotton.
1875	122,402
1876	175,768
1877	154,640
1878	179,251
1879	216,020
Total	848,041

GALVESTON, HARRISBURG AND SAN ANTONIO RAILWAY.

	Bales cotton.
1869	51,296
1870	53,760
1871	56,240
1872	60,300
1873	62,547
1874	61,354
1875	65,201
1876	69,200
1877	70,554
1878	73,672
1879	81,997
Total	706.111

The number of bales for the years previous to 1875 are approximated, the records having been destroyed by fire.

HOUSTON, EAST AND WEST TEXAS RAILWAY.

	Bales cotton.
1878	2,428
1879	3,726
Total	6,154

TEXAS AND NEW ORLEANS RAILROAD.

	Bales cotton.
1869 to 1874	57,394
1875	9,397
1876	9,853
1877	10,211
1878	10,471
1879	10,767
Total	108,093

WAGON TRAFFIC TO HOUSTON.	Bales cotton.
1869 to 1879	12,000

Making a grand total of 4,652,727 bales of cotton for the past ten years, at an average value of $50 per bale, amounting to the handsome sum of $232,636,350.

Cotton is only one item, to which is to be added large quantities of sugar, molasses, hides, wool, beef cattle, and other valuable articles of export, brought to and through Houston by the various lines of railway converging here.

The shipments and distribution of western produce, northern manufactured articles, and other merchandise imported, bear corresponding ratio in quantity and value with the cotton and other articles exported through this important gateway to the market of the world. This commerce is rapidly increasing and must soon assume gigantic proportions, and now requires the increased facilities to be afforded by enlarging and deepening the bayou from Clinton to Houston. Buffalo Bayou, notwithstanding the narrow crooks and sharp bends as it approaches Houston, transports by far more commerce than any other tide-water from the coast of Texas. The tonnage employed in transportation on this bayou which has arrived and departed from its landing at Houston, as shown by the annual statement of the Direct Navigation Company for the period from 1869 to 1879, inclusive, amounts to 3,562,500 tons; it is therefore very apparent that this bayou even in its present unimproved condition is very important to the commerce of the country, and the benefits will be much greater when widened and straightened, and with a depth of 12 feet from Clinton to Houston, as contemplated and intended by the tide-water improvement.

STATEMENT OF THE COTTON MOVEMENT OF HOUSTON, TEX., UNDER THE DATES NAMED.

HOUSTON COTTON EXCHANGE AND BOARD OF TRADE,
Houston, Tex.

	Bales.
Gross receipts for the year ending August 31, 1880	472,309
Shipments for the year ending August 31, 1880*	470,676
Gross receipts from September, 1880, to December 10, 1880	319,036
Gross receipts same time previous year	305,309
Net receipts for the year ending August 31, 1880	159,575
Net receipts for the previous year	108,865

Statement of products and merchandise received and forwarded at Houston by the Houston and Texas Central Railway Company for the year ending September 30, 1880.

Products, &c.	Forwarded.	Received.	Average.	Total.
				Pounds.
Cotton	29,992 bales	241,660 bales	271,652 bales, at 500 lbs.	135,826,000
Hides	610,127 pounds	1,467,066 pounds		2,077,193
Wool	77,462 pounds	1,219,447 pounds		1,296,909
Sheep	400 head	3,134 head	3,534 head, at 100 lbs	353,400
Hogs	2 head	1,158 head	1,160 head, at 100 lbs	116,000
Other animals	1,461 head	3,742 head	5,200 head, at 800 lbs	4,162,400
Shingles	39,619⅔ M		At 300 lbs	11,885,900
Lumber	39,574 M feet	497 M feet	40,071 M ft., at 4 lbs. pr. ft	160,284,000
Salt	15,479,615 pounds			15,479,615
Flour	1,761,384 pounds	17,814,830 pounds		19,576,214
Grain	407.935 pounds	80,289,815 pounds		80,697,750
Bacon	2,322,472 pounds	11,256,059 pounds		13,578,531
All other merchandise	130,958,545 pounds	89,757,684 pounds		220,716,229
Total in pounds				666,050,141
Tons				$333,025\frac{141}{2000}$

	Bales.
* Of the shipments, there went Gulfward	433,819
Of same shipments, there went north by rail to New England spinners and to Europe	36,857

TONNAGE AND BUSINESS OF THE HOUSTON DIRECT NAVIGATION COMPANY.

The following vessels of the Houston Direct Navigation Company are constantly employed in the trade of Buffalo Bayou, between the cities of Houston and Galveston and vessels in the roadstead outside Galveston bar: Steamboat Lizzie, 429 tons; steamboat Diana, 452 tons; tug General S. Van Vliet, 44 tons; tug Ontario, 8 tons; tug J. H. Sterrett, 29 tons; tug Louise, 105 tons; 18 barges, 2,493 tons.

The amount of freight transported by the Houston Direct Navigation Company in the year ending September 30, 1879, was, viz:

	Pounds.
159,356 bales cotton	79,678,000
Miscellaneous freight	165,332,000
Total	245,010,000

The total number of bales cotton transported by the Houston Direct Navigation Company through the waters of Buffalo Bayou in the ten years from January 1, 1869, to January 1, 1879, is 1,439,438 bales.

LOCAL AND GULF COAST TRADE.

In addition are a number of tugs and sailing vessels engaged in the trade of Houston direct with Galveston, Sabine Pass, Beaumont, Orange, Calcasieu, and other Gulf ports.

The following is the number of vessels, with port of departure, tonnage, engaged in the trade of Houston in the twelve months ending September 30, 1880, and tonnage of same, which were unable to proceed beyond Clinton on account of want of depth of water from that point to the city of Houston:

Port of departure.	Number of vessels (schooners).	Tonnage.
Pensacola	9	2,769
Morgan City	101	9,574
Mobile	2	382
Pascagoula	4	434
Galveston	12	1,240

THE TRADE WITH NEW ORLEANS AND NEW YORK.

Owing to the inability of steamships, and other vessels trading with New York and New Orleans, to proceed beyond Clinton, the trade between New York, Houston, and the interior of Texas, from Houston, via the Morgan line, is carried via New Orleans, and from thence to Clinton. The New Orleans trade is carried direct from New Orleans, or Morgan City, to Clinton.

The number of trips made by the steamships of the Morgan line for the year ending September 30, 1880, is 239; average tonnage, 1,200 tons; total tons, 286,800.

The steamships of the Mallory line, which are also largely engaged in the trade of Houston and the interior of Texas, run direct from New York to Galveston, and either ship to Houston, via rail, or by steamboat and barges up Galveston Bay and Buffalo Bayou. The amount of this business cannot be given, but it is known to be very large.

In addition, there are a large number of sailing vessels engaged in the trade with Atlantic and Gulf ports, which are compelled to transship freights destined for Houston in the same way; all of which could come direct were the channel improved to Houston to same depth as provided through Galveston Bay. A great portion of the foreign imports arriving at Galveston in the year named has been railroad iron and steel for Houston account. Of this, 4,000 tons iron have been for the Texas Central Railroad, and placed in bonded warehouse at Houston. This has all been withdrawn, paying $67,200 duties to the government.

In addition to this, 6,000 tons iron for the Texas and Pacific Railroad, entered at custom-house, Galveston, has been transported to Houston, via Buffalo Bayou.

There has been received at Houston, for the Houston and Texas Central Railway Company, since October 1, 2,186 tons steel rail from Europe, paying a duty of $61,208.

There is now afloat for Houston, and to arrive by September 1, 1880, for account of that company, 7,000 tons additional steel rail, making a total of duties paid to the United States Government in the eleven months of $252,000.

POPULATION, TAXABLE WEALTH, TRADE, COMMERCIAL, INDUSTRIAL, AND OTHER STATISTICS OF THE CITY OF HOUSTON, TEX.

The city of Houston has a population of about 20,000. Its situation at the head of tide-water navigation on Buffalo Bayou, only 50 miles from the Gulf of Mexico, gives it command of water transportation, which, although impeded by the shallowness of the bayou approaching Houston, has enabled it to compete for the business and carrying trade of a large portion of the State of Texas. Communication with the Gulf of Mexico and Galveston is had direct, via steamboats, tugs, and barges, and with the present terminus of the ship-channel improvement at Clinton, via the Texas Transportation Railway, 8 miles in length. The following railway lines center at Houston:

	Miles.
Houston and Texas Central Railway, main line	341
Houston and Texas Central Railway, western branch	116
Houston and Texas Central Railway, northwest branch	54
Texas Central Railway	135
International and Great Northern Railway, main line	332
International and Great Northern Railway, Austin division	180
International and Great Northern Railway, Columbia division	50
International and Great Northern Railway, Minneola division	44
International and Great Northern Railway, San Antonio division	80
Galveston, Harrisburg and San Antonio Railway, main line	216
Galveston, Harrisburg and San Antonio Railway, Lagrange division	20
Galveston, Houston and Henderson	50
Texas and New Orleans Railway	105
Gulf, Colorado and Santa Fé Railway	175
Houston, East and West Texas, narrow gauge	75
Texas Western Narrow Gauge Railway	42
Texas Transportation Company	8
Total number of miles	1,923

The assessed valuation of property by latest assessment is $5,452,268. The assessment of Harris County, of which Houston is the county seat, is $9,500,000. The estimated valuation in manufactories of various kinds is $2,083,000.

Estimated sales of merchandise and manufactured goods for year ending September 30, 1880, $13,500,000.

There are two national banks, two incorporation banks, and two private bankers; three cotton compresses; one grain elevator; eleven public school buildings; five private school and academy buildings; and twenty-four churches.

The following is a list of manufacturing and industrial establishments:

Manufactories: Cotton-seed oil, 1; cotton pickeries, 3; wagons and carriages, 8; saddles and harness, 5; sash, doors, &c., 5; paving material, 2; roofing, 1; awnings and tents, 2; patterns and models, 4; saddle-trees, 1; tinware, 9; boilers, 4; brooms, 1; soap, 1; cigars and tobacco, 1; ice, 2; cooperage, 4; copper work, 1; furniture, 7; bone works, 1; patent medicines, 3; candy, 5; wood-turning work, 6.

Other industries: Stone and marble works, 1; boots and shoes, 21; jewelry and watch making, 8; gas-fitting, 2; plumbing, 2; blacksmithing, 12; gunsmithing, 4; bakeries, 15; tailoring, 16; millinery, 6; dressmaking, 6; upholstery, 7; confectioneries, 8; book-binding and printing, 3; newspapers, 6; nurseries, 5; wine (native), 2.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 54.

BRONX RIVER, NEW YORK.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Report of survey of Bronx River, New York.

JANUARY 24, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 21, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers of yesterday's date, and accompanying copy of report from Col. John Newton, Corps of Engineers, upon a survey of Bronx River, or West Farms tide-water Creek, from its mouth in the city of New York, made in compliance with the provisions of the river and harbor act of June 14, 1880.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 20, 1881.

SIR: In compliance with provisions of the river and harbor act of June 14, 1880, I have the honor to submit herewith a copy of a report to this office from Col. John Newton, Corps of Engineers, of the results of a survey made under his direction, of Bronx River, or West Farms tide-water Creek, from its mouth in the city of New York, with the view to improvement of its navigation.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. & Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY OF BRONX RIVER, OR WEST FARMS TIDE-WATER CREEK, FROM ITS MOUTH IN THE CITY OF NEW YORK.

UNITED STATES ENGINEER OFFICE,
New York, January 14, 1881.

GENERAL: I have respectfully to report upon the survey of the "Bronx River, or West Farms tide-water Creek, from its mouth in the city of New York," as provided for in the river and harbor act approved June 14, 1880.

The Bronx River is in the collection district of New York.
The city of New York is the nearest port of entry.
The nearest light-house is the North Brother Light.
The amount of revenue collected at New York during the past fiscal year was $131,812,349.89.

The amount of commerce and navigation to be benefited by the proposed improvement is not known, but the vessels navigating the river are very few, and most of the freighting is done by one propeller, and a few canal boats, loaded with coal.

Owing to the risk of navigating the creek, it is difficult to find a pilot to take charge of a vessel going up or down the river.

The creek empties into the East River by a shallow and tortuous channel winding through a mud flat, and obstructed by shoals varying in depth from 2.7 feet to 3.5 feet at mean low-water.

From the head of the projected dike to the rock 1,600 feet below the West Chester road, the depth is about 6 feet at low-water, Thence to the West Chester road, 3.3 feet to 5 feet. From the West Chester road to the gas works, the depth is from 3 feet to 2 feet at low-water. From the gas works up for a distance of 2,400 feet, the depth varies from 2 feet to 0 feet at low-water. Thence to the dam about 1,100 feet farther up, the bottom is bare at low-water, with the exception of a small stream a few inches deep, which flows from the tail-race of the mill.

The Bronx is a tidal stream, as far up as the dam at West Farms. The rise and fall diminish somewhat after passing above the West Chester road bridge.

The amount of fresh water is large, but works are under construction on the part of the city of New York, to divert the main supply of this water for the use of the city. After the completion of these, the amount of fresh water following the course of the creek will be greatly reduced.

It has been found very difficult to obtain a statement of the improvements needed for the purposes of commerce, either present or prospective, Appendix A being the only one received, and the main object of any improvement being apparently to escape the rates charged for freight by the railroad.

For an improvement of the river it would be necessary to dredge and form a channel of 30 feet in width, and 4 feet deep at mean low-water, from the upper end of the present navigable portion, commencing say 2,400 feet above the gas works to the West Chester road bridge.

In this section are several rocky ledges to be excavated, and the bottom is quite hard. The estimate for this section is $35,362.50.

From the West Chester road bridge the width of the channel should be made, for a distance of 1,600 feet down stream, 30 feet wide, and 5 feet deep at mean low-water; one ledge of rock at the lower end of this section should be removed. Estimate for this section $6,612.50.

Thence down to the proposed head of the dike, the present channel would need widening so as to give 5 feet of depth at mean low-water for a width of 40 feet. Some bowlders also would be removed. Estimate for this section $4,025.

For the rest of the way, the improvement would consist in dredging a clear channel of 5 feet in depth, and supporting the same by a concave dike extending into deep water of the East River. Estimate for this section $90,275.

The improvements most needed are probably those enumerated as of the first two sections of the creek.

The survey was made by the party under the charge of Mr. Matthew Cox, assistant engineer, under the supervision of Mr. R. H. Talcott, assistant engineer, whose report is forwarded herewith.

The plan of improvement was made under my supervision.

Respectfully submitted,

JOHN NEWTON,
Colonel of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. R. H. TALCOTT, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
New York, January 14, 1881.

GENERAL: I have the honor to submit the following report on the survey of the Bronx River, or West Farms tide-water Creek, New York City, with such information in regard to the commerce and navigation of the same as I have been able to obtain.

The accompanying chart shows the results of the late survey, and the works proposed for the improvement of the channel from the mouth of the river to near the head of tide-water. An estimate of the latter is hereto appended.

The Bronx River is in the collection district of New York.

New York City is the nearest port of entry. The nearest light-house is North Brother Light, on North Brother Island, in the East River.

The amount of revenue collected at New York City during the past fiscal year, is $131,812,349.89.

The amount of commerce and navigation to be benefited by the proposed improvement is not known.

The amount of tonnage for the past fiscal year as reported by those engaged in business in the locality, is 65,000 tons.

The Bronx River is a tide-water stream emptying into the East River. The tides extend as far as the dam in West Farms, but the rise and fall diminish somewhat after passing the West Chester road drawbridge. The supply of fresh water is quite large; but works are now under construction by the city of New York, for diverting the main fresh-water supply for the use of the city. The dam and reservoir are some distance from tide-water, and there are several small streams which empty into the river below them, so that there will still be a limited amount of fresh water.

During a dry season like the past summer, the bed of the river is entirely bare at mean low-water for some distance below the dam, with the exception of a small stream a few inches deep which comes from the tail-race of the mill.

The depth of water in the channel at mean low-water, is between 2 and 3 feet from the gas works to the railroad drawbridge, and the channel is both narrow and crooked. It is also obstructed by several rocky ledges which extend either partially or all the way across it. The bottom in this part is generally hard, and composed of heavy gravel and cobble tones where it is not solid ledge rock. From the railroad bridge for about 1,600 feet below the West Chester road bridge there are several rocky ledges, and the easterly bank is almost all solid rock; but these ledges extend only part of the way across the channel, except the lower one which extends entirely across. From this point for about 4,000 feet, there is a narrow channel of 6 feet depth, which has only a few bowlders to obstruct it. From this point to the mouth the channel widens considerably, and there are several bars with less than 3 feet at mean low-water. At the mouth the channel becomes crooked and undefined through a large mud flat, which is nearly a mile wide.

The banks of the river from the dam down to a short distance below the West Chester road bridge are mostly firm land or reclaimed marsh land, and sometimes rocky. The westerly bank for a considerable portion of this distance is protected by a stone wall which forms the dock front. For the rest of its course the banks are almost entirely marsh meadow.

The vessels navigating the river are very few, and most of the freighting is done by one propeller and a few canal boats loaded with coal. Owing to the dangers to navi-

gation it is hard to find a pilot who will take the risk of carrying a vessel up or down the river.

The works for the improvement of the channel which are described below, with the exception of those at the lower end, will hardly be a permanent relief, but will probably last for several years, and are as follows: From a point near the upper end of the present navigable part of the river to the West Chester road bridge a channel 30 feet wide and 4 feet deep at mean low-water is to be excavated.

In this section there are several rocky ledges to be excavated, and the bottom is quite hard. From the West Chester road bridge the width of the channel will be 30 feet and the depth 5 feet for a distance of about 1,600 feet, where the last known ledge of rock which obstructs the channel is encountered. From this point to the beginning of the proposed dikes, as shown on the accompanying chart, the present channel is to be widened so as to give 5 feet depth at mean low-water for a width of 40 feet, and some bowlders are to be removed.

The rest of the way the improvement will be to dredge a clear channel giving 5 feet at mean low-water for a width of 50 feet, and support it by a dike presenting a concave surface to the currents. At the upper end a parallel dike will also be required in order to narrow the channel way sufficiently to keep the proposed depth.

The survey was made during the month of September by the party under the charge of Mr. Matthew Cox, assistant engineer under my supervision.

The plane of reference to which all the soundings have been reduced was obtained by observations of the tides at four points on the river. The results obtained from these observations is shown in tabular form on the accompanying chart.

ESTIMATE.

From near head of tide-water to West Chester road bridge:			
1,050 cubic yards rock excavation, at $20	$21,000 00		
13,000 cubic yards dredging, at 75 cents	9,750 00		
		$30,750 00	
Engineering and contingencies		4,612 50	
			$35,362 50
From West Chester road bridge 1,600 feet south:			
200 cubic yards rock excavation, at $20	$4,000 00		
3,500 cubic yards dredging, at 50 cents	1,750 00		
		5,750 00	
Engineering and contingencies		862 50	
			6,612 50
From 1,600 feet south of West Chester road bridge to dikes:			
7,000 cubic yards dredging, at 50 cents		3,500 00	
Engineering and contingencies		525 00	
			4,025 00
From beginning of dikes to East River:			
8,500 linear feet of dike, at $8	$68,000 00		
30,000 cubic yards of dredging, at 35 cents	10,500 00		
		78,500 00	
Engineering and contingencies		11,775 00	
			90,275 00
			136,275 00

All of which is respectfully submitted by your obedient servant,

R. H. TALCOTT,
Assistant Engineer.

Col. JOHN NEWTON,
Corps of Engineers, U. S. A.

A.

STATEMENT AS TO NECESSITY FOR IMPROVEMENT.

Of the many public improvements under the consideration of the government, few, perhaps, have a more urgent claim, or promise so certain and important a return as the improvement of the Bronx River. Nature has supplied means of navigation to a large and important tract of country now within the city limits, and which, at a comparatively trifling outlay, may be made the means of changing an almost deserted district into a prosperous and thriving region.

The practically useless condition of the river for shipping purposes has long been felt by all having commercial interests in West Farms, while all acquainted with the situation look upon the proposed improvement as one of greatest importance.

Not only have no improvements been made, but from neglect obstructions have been allowed to accumulate, rendering navigation so dangerous as to be next to useless.

The freshet in the spring of 1853 carried away the mill-dam which is at the upper part of West Farms, a stone bridge, barns, houses, &c., depositing the débris along the river as far as the second drawbridge. As a result, we find large bowlders resting there which decrease the clear depth of the river so as to obstruct the passage of any other than small barges. There are also ledges of rock which nature has placed in the bed of the river, some of them lying transversely. To these serious drawbacks add the general and gradual filling up of the river with gravel, sand, &c., the sharp bends in the vicinity of West Farms, and we can realize the difficulty that is met with by men that are endeavoring to carry on business in that section, nor can it be wondered at that factories, coal, lumber, brick, and lime yards, &c., which were once located at West Farms have been removed to other and more favorable localities.

Smith's carpet factory, now at Yonkers, covering acres of ground, formerly at West Farms, found it impossible to obtain a reliable shipment even at increased rates; this is but one instance where the condition of navigation has been a detriment to West Farms, and there are many more to prove the immediate necessity of a change.

There are only two pilots in New York Harbor who are willing to come up the Bronx, and in these cases it is done more as a favor than from consideration of pay.

Wherever a pilot has been up the river for the first time the situation is so indelibly impressed upon his memory that he cannot be approached a second time. It is not an uncommon occurrence for a loaded boat going up against the tide to get on the bowlders and ledges and be broken by the tide going out, leaving it like a needle on a pivot. Daniel Mapes has paid as high as $1,000 for injury to one boat; $700, &c., has been paid by others.

For the same amount of merchandise the men of West Farms have to pay $30 against $10, the figure at Mott Haven. The result is obvious; and that is, that instead of manufacturing and business interests increasing they are going backward. Factories, coal yards, &c., have been located there only to be closed again, while others, foreseeing that the difficulty, uncertainty, and increased rate of shipping, would not permit a profitable business, have wisely gone elsewhere without the humiliation of a failure.

What should be the means of cheap, easy transportation and therefore a benefit is in point of fact a cause of failure.

With very little outlay of money upon what is the life-giving element of West Farms, where now is indolence, inactivity, and poverty, we would find life and energy with its attending wealth.

The rickety old barns of houses along the banks of the river would be replaced by fine wharves, store-houses, grain-elevators, &c.

All the freight and merchandise for the surrounding country would come by this, the cheapest possible way; building stone, brick, lime, lumber, provisions, and freight of every description is being demanded more and more. Improvements are being made in and about West Farms, so that every foot of curb and gutter and flagging-stone which is being laid would come by the Bronx River were it in any way navigable. Opening of streets, building of sewers, house building, all demand this the cheapest and best channel of transportation. Real estate, which now has no demand, would soon become valuable; where now we see waste land we should see prosperous establishments.

The improvement must be made some time, and while it is just as cheap to have it made now as in 10 or 20 years, every day that is allowed to go by until it is made represents so many days of thrifty business lost to West Farms and the vicinity.

The old town was unquestionably chosen with its present site with the view of having advantage over other inland towns by the cheaper freight facilities afforded by the river Bronx.

Last year over 65,000 tons were shipped to West Farms, 150,000 bushels of grain, &c., as well as brick, lumber, lime, &c. This was distributed to eight merchants, and all of them say that they would do double the present business were the improvements made.

If the river was in a good condition the largest of the Erie Canal barges would have access to West Farms. The Haverstraw brick, blue stone of the Hudson River, granite from Vermont, lumber from Maine would all be delivered without transshipment, which fact materially affects the cost of transportation and insurance rates. Lines of sloops would be started and prove a profitable enterprise. Nothing under a miraculous interposition will ever revive life and energy into West Farms if this cannot. The people all recognize this fact; all anxious to have the improvement made and want it immediately, admit and are confident that it will pay the cost over and over again and be the means of giving West Farms an important manufacturing stand and make it a storehouse, port, and center of business, and in fact a New York to the neighboring towns.

All of which is respectfully interceded in behalf of the district.

EDW. H. HOLDEN, *C. E.*

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 56.

ESTIMATES OF DEFICIENCIES FOR THE INDIAN SERVICE

LETTER

FROM

THE SECRETARY OF THE INTERIOR,

TRANSMITTING

Estimates of deficiencies for the Indian service for the year 1881 *and for prior years.*

JANUARY 21, 1881.—Referred to the Committee on Appropriations and ordered to be printed.

DEPARTMENT OF THE INTERIOR,
Washington, January 21, 1881.

SIR: I have the honor to transmit herewith, with my approval, deficiency estimates for the Indian service for the fiscal year 1881 and prior years, together with copy of explanatory letter of the Indian Office relating to said estimates.

Very respectfully,

C. SCHURZ,
Secretary.

To the SPEAKER
of the House of Representatives.

DEPARTMENT OF THE INTERIOR,
OFFICE OF INDIAN AFFAIRS,
Washington, January 21, 1881.

SIR: I have the honor to transmit herewith, in duplicate, an estimate of appropriations required to meet deficiencies in the appropriations for the Indian service for the fiscal year 1881 and prior years. In submitting this estimate, it has been sought to itemize so far as practicable, the expenditures made, and that idea has been carried out so far as relates to deficiencies therein named which occurred prior to the present fiscal year.

The largest deficiencies previous to the current year are in the appropriations for the "transportation of Indian supplies." The subject of insufficient appropriations for this purpose has repeatedly been brought to the attention of Congress and its committees. An estimate for the purpose, for deficiencies for the fiscal years 1879 and 1880, was presented to Congress at its last session, and the assurance of the Committee on Appropriations of the House was given that the same should be duly considered, but no action seems to have been taken thereon.

A large proportion of the indebtedness for transportation is due to contractors who have faithfully and promptly performed the service, under the orders of the department, and I deem it not only unjust to the claimants to delay payments, but unwise, inasmuch as such a course undoubtedly tends to increase the rates which the department is obliged to pay for this service.

The item of $25,000 for the support of the Utes in Colorado is necessary for the reason that heretofore the accumulated interest arising on their principal of $500,000 to their credit in the Treasury has been used for their support; but under the provisions of the act approved June 15, 1880, ratifying the Ute agreement the sum of $60,000 was drawn out of the Treasury and paid to them per capita. Increased expenditures for subsistence have also been made for said Indians upon the recommendation of the Ute Commission, which, together with the increased number of Indians which it was and now is necessary to feed, pending the negotiation of the recent treaty with them, and their removal to their new lands, has exhausted the fund appropriated for their support during the current year.

An additional appropriation of $50,000 for the support of the Arapahoes, Cheyennes, Apaches, Kiowas, Comanches, and Wichitas is required, for the reason that the amount appropriated for their support for the current fiscal year, $305,000 (being $45,000 less than the sum estimated for), is inadequate to supply them with the necessary articles required for their care and subsistence. There are 10,022 Indians at the two agencies to be subsisted under this appropriation, viz, Cheyenne and Arapahoe 5,899, and Kiowa 4,123, and even with the sum asked for, partial rations only can be supplied. If a full ration for each person for an entire year was supplied, estimating the cost at 15 cents, it would involve an expenditure of over a half million dollars. The regular appropriation of $290,000 made for said Indians for the fiscal year 1880 proved to be insufficient, and a deficiency appropriation was made by Congress for that year of the sum of $80,000, making a total of $370,000.

The amount recommended ($5,000) for the support of Nez Percés of Joseph's band, is based upon the fact that the appropriation of $15,000 for the current year has proved to be deficient; $25,000 was appropriated for the fiscal year 1880, $10,000 of which was a deficiency. They number 344 souls.

Under the title of "Contingencies Indian Department," the sum of $7,500 is recommended for the balance of the fiscal year. This amount is absolutely necessary, owing to exigencies of the service requiring extraordinary expenditures, rendered necessary by reason of the number of Indian delegations who have visited this city since July last, on business for their respective tribes.

The item of $1,000 for "traveling expenses of Indian inspectors" for the balance of the fiscal year, is actually necessary, owing to the large number of agencies necessary to be visited and inspected during the year. The sum provided for the current year, is $5,000 for five inspectors, which amount, it is calculated, will be exhausted by April 1, next.

The other items in the estimate not particularly referred to, are sufficiently explained in detail therein, to enable Congress to understand the object of the appropriations, and I respectfully recommend that these estimates meet with your approval, and be transmitted to Congress for the action of that body.

Very respectfully,

E. M. MARBLE,
Acting Commissioner.

The Hon. SECRETARY OF THE INTERIOR.

Estimates of appropriations required for the service of the fiscal year ending June 30, 1881, *and prior years, by the Indian Office.*

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.
Contingencies Indian Department, 1874.		
Amount due T. I. Mesick, balance on account for board of George Bushyhead and wife, North Carolina Cherokee Indians, being a deficiency for the fiscal year 1874		$145 37
Incidental expenses Indian service in Dakota, 1876.		
Amount due Frederic Driscol, manager "Pioneer Press Company," Saint Paul, Minn., for advertising for sealed proposals for furnishing supplies for the Sisseton Agency under date of July 24, 1875, being a deficiency for the fiscal year 1876	$66 00	
Amount due A. G. Wilcox, treasurer Tribune Publishing Company, Minneapolis, Minn., for advertising for sealed proposals for furnishing supplies for the Sisseton Agency under date of July 24, 1875, being a deficiency for the fiscal year 1876	44 60	
		110 60
Holding a general council of Indians in the Indian Territory, 1875–'76.		
Amount due E. J. Brown for services and mileage in attending a council of Indians in the Indian Territory, being a deficiency for the fiscal year 1876	40 00	
Amount due Stephen Foreman for services and mileage in attending a council of Indians in the Indian Territory, being a deficiency for the fiscal year 1876	36 00	
Amount due B. H. Sixkiller for services and mileage in attending a council of Indians in the Indian Territory, being a deficiency for the fiscal year 1876	38 00	
		114 00
Traveling expenses of Indian inspectors, 1878.		
Amount due Southern Pacific Railroad Company for transporting Indian inspectors over their line, being a deficiency for the fiscal year 1878		45 00
Telegraphing and purchase of Indian supplies, 1879.		
To effect a transfer on the books of the Treasury from appropriation "Contingencies Indian Department, 1879," to appropriation "Telegraphing and purchase of Indian supplies, 1879," to close the account of Ewal Seward, special Indian agent, involving no expenditure of money from the Treasury, being for the fiscal year 1879, $1,633.01.		
Amount due the Union Pacific Railroad Company for transporting passengers over its road, being a deficiency for the fiscal year 1879	235 28	
Amount due the Central Pacific Railroad Company for transporting passengers over its road, being a deficiency for the fiscal year 1879	186 07	
Amount due the Western Union Telegraph Company for messages transmitted during May and June, 1879, being a deficiency for the fiscal year 1879	361 56	
		782 91
Traveling expenses of Indian inspectors, 1879.		
This amount to pay indebtedness incurred for traveling of Indian inspectors, being a deficiency for the fiscal year 1879	1 16	
Amount due Central Pacific Railroad Company for transporting Indian inspectors, being a deficiency for the fiscal year 1879	43 00	
Amount due Southern Pacific Railroad Company for transporting Indian inspectors, being a deficiency for the fiscal year 1879	104 90	
		149 06
Transportation of Indian supplies, 1879.		
Amount due Isaac G. Baker for transporting 3,364 pounds supplies from Saint Louis to Crow Agency under contract of June 21, 1878, being a deficiency for the fiscal year 1879	171 56	
Amount due Chicago, Saint Paul, Minneapolis and Omaha Railway Company for transporting 216 pounds supplies from Hudson to Chandler, Wis., for La Pointe Agency during third and fourth quarters, 1878, open market transaction, being a deficiency for the fiscal year 1879	67	
Amount due Louis F. Booth for transporting 5,104 pounds supplies from New York and 98 pounds from Chicago to Crow Creek Agency under contract of June 25, 1878, being a deficiency for the fiscal year 1879	52 32	

Estimates of deficiencies required for the Indian service, &c.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.
Transportation of Indian supplies—Continued.		
Amount due John C. Barr for transporting supplies as follows, viz: 22,160 pounds from Chicago to Blackfeet Agency; 5,545 pounds from Sioux City to Blackfeet Agency; 20,122 pounds from Sioux City to Crow Agency; 7,035 pounds from Chicago to Crow Agency; 3,350 pounds from Chicago to Fort Belknap Agency; 14,950 pounds from Duluth to Fort Berthold Agency; 95,118 pounds from Sioux City to Fort Berthold Agency; 27,677 pounds from Sioux City to Fort Peck Agency—under contracts of June 25 and 28, 1878, being a deficiency for the fiscal year 1879	$3,602 78	
Amount due Levi Spiegelberg for transporting 14,721 pounds supplies from New York and 655 pounds from Kansas City to Navajo Agency, under contract of June 27, 1878, being a deficiency for the fiscal year 1879	1,133 56	
Amount due James McGarry for transporting 14,344 pounds supplies from New York, Chicago, Sioux City, and Saint Louis to Lemhi Agency, under contract of June 25, 1878, being a deficiency for the fiscal year 1879	938 17	
Amount due Southern Pacific Railroad Company for transporting supplies over their line, being a deficiency for the fiscal year 1879	310 52	
Amount due Levi Spiegelberg for transporting 25,590 pounds supplies from Chicago to San Carlos Agency, Arizona, under contract dated June 27, 1878, being a deficiency for the fiscal year 1879	2,239 12	
Amount due Louis F. Booth for transporting 123,773 pounds of supplies from New York, Chicago, and Saint Louis to Lower Brulé, Cheyenne River, and Standing Rock Agencies, and to Sioux City, under contract dated June 25, 1878, being a deficiency for the fiscal year 1879	1,100 93	
		$9,556 63
Transportation of Indian supplies, 1880.		
Amount due Benton Line for transporting 2,003 pounds supplies from Bismarck to Fort Peck Agency, during the fourth quarter, 1879, under open market arrangement, being a deficiency for the fiscal year 1880	20 03	
Amount due Isaac G. Baker for transporting 852 pounds supplies from New York to Jamestown, Dak., $12.35; and 18,428 pounds from Chicago to Brainerd, Minn., $138.21, under contract of April 25, 1879, being a deficiency for the fiscal year 1880	150 56	
Amount due John Chrisman for transporting 51,297 pounds supplies from Bryan to Shoshone Agency, during the second and third quarters, 1880, under open market arrangement, being a deficiency for the fiscal year 1880	897 69	
Amount due J. J. Cozart for transporting 3,403 pounds supplies from The Dalles to Malheur Agency, during the third quarter, 1880, under open market arrangement, being a deficiency for the fiscal year 1880	153 13	
Amount due Henley & Rea for transporting 6,685 pounds supplies from San Francisco to Round Valley Agency, under contract of August 12, 1879, being a deficiency for the fiscal year 1880	167 12	
Amount due B. F. Hartley for transporting 15,437 pounds supplies from Brainerd to Leech Lake, Minn., in March and April, 1880, under open market arrangement, being a deficiency for the fiscal year 1880	192 96	
Amount due Central Pacific Railroad Company for transporting supplies over their lines, being a deficiency for the fiscal year 1880, viz: $664.70 and $1,032	1,696 70	
Amount due Central Pacific Railroad Company for transporting supplies over their lines, being a deficiency for the fiscal year 1880	142 32	
Amount due Levi Wilson, as certified to by the accounting officers of the Treasury, for transporting supplies to sundry places, in June, 1880, under contracts of April 25 and May 5, 1879, being a deficiency for the fiscal year 1880	1,400 35	
Amount due Zadoc Staab for transporting 325 pounds supplies from New York to Mescalero Agency, and 360 pounds from Chicago to San Carlos Agency, under contract of May 2, 1879, being a deficiency for the fiscal year 1880	45 28	
Amount due Nathan W. Wells for transporting supplies to Salt Lake City, from New York, 2,677 pounds; from Omaha, 4,740 pounds; from Chicago, 26,125 pounds; from Chicago, 112 pounds, and 29,154 pounds from Chicago to Elko, under contract of April 23, 1879, $1,673.04 and $1,906.50, being a deficiency for the fiscal year 1880	3,579 54	
Amount due Central Pacific Railroad Company for transporting supplies during the third and fourth quarters, 1879, being a deficiency for the fiscal year 1880	2,129 14	
Amount due Levi Wilson for transporting 198,360 pounds supplies from New York, Kansas City, Saint Louis, and Chicago to Muskogee, Caddo, Coffeyville, Wichita, and to Navajo, Los Pinos, and Southern Ute Agencies, under contracts dated April 25 and May 5, 1879, being a deficiency for the fiscal year 1880	9,292 16	

Estimates of appropriations required for the Indian service—Continued.

Detailed objects of expenditures, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.
Transportation of Indian supplies, 1880—Continued.		
Amount due sundry Indians at the Osage Agency for transporting supplies from Coffeyville to Osage Agency during the second quarter, 1880, being a deficiency for the fiscal year 1880	$178 21	
Amount due G. H. Kimberland for transporting 12,883 pounds supplies from The Dalles to Malheur Agency during second quarter, 1880, open market arrangement, being a deficiency for the fiscal year 1880	579 73	
Amount due James C. McVay for transporting 12,300 pounds supplies from Sioux City to Rosebud Landing, and 7,700 pounds from Sioux City to Yankton, $26.82; and 319,806 from Sioux City and Yankton to Santee, Crow Creek, Pine Ridge, Lower Brulé, and Rosebud Agencies, $503.24; under contract of April 26, 1879, being a deficiency for the fiscal year 1880	530 06	
Amount due W. N. Bonham for transporting 8,837 pounds supplies from The Dalles to Malheur Agency during second quarter 1880, under open market arrangement, being a deficiency for the fiscal year 1880	397 66	
Amount due Levi Wilson for transporting supplies from New York to Abiquiu Agency, 8,731 pounds, under contract of May 5, 1879, being a deficiency for the fiscal year 1880	513 33	
Amount due C. K. Peck for transporting 3,018 pounds supplies from Yankton to Red Cloud Agency, under contract of June 22, 1879, being a deficiency for the fiscal year 1880	11 72	
Amount due James McGarry, deceased, for transporting 5,505 pounds supplies from Sioux City to Fort Berthold Agency, under contract of April 25, 1879, being a deficiency for the fiscal year 1880	32 75	
Amount due Sanford B. Coulson for transporting 117,243 pounds supplies from Yankton to Fort Peck Agency, 25,500 pounds to Yankton Agency, and 14,700 pounds to Fort Berthold Agency, under contract of May 5, 1879, being a deficiency for the fiscal year 1880, $703.46 and $71.55	775 01	
Amount due James McGarry for transporting supplies as follows, viz: From Sioux City to Crow Creek Agency, 1,207 pounds; to Rosebud Landing, 1,202 pounds; to Lower Brulé Agency, 1,202 pounds; to Cheyenne River Agency, 185 pounds; to Santee Agency, 105 pounds; to Cheyenne River Agency, 16,364 pounds; to Crow Agency, 67,100 pounds; to Crow Creek Agency, 4,372 pounds; to Lower Brulé Agency, 8,056 pounds; to Rosebud Landing, 388,062 pounds; to Santee Agency, 3,992 pounds; to Standing Rock Agency, 16,874 pounds: and to Rosebud Landing, 411,146 pounds; from Saint Paul to Crow Creek Agency, 421,022 pounds; and to Lower Brulé Agency, 146 pounds; from Sioux City to Fort Berthold Agency, 14,226 pounds; to Crow Agency, 646 pounds; to Blackfeet Agency, 1,095 pounds; to Fort Berthold Agency, 7,450 pounds; to Fort Belknap Agency, 10,720 pounds; to Blackfeet Agency, 14,016 pounds; to Rosebud Agency, 1,722 pounds; to Yankton Agency, 19,608 pounds; to Blackfeet Agency, 668 pounds; and from Bismarck to Blackfeet Agency, 16,765 pounds, under contract of April 25, 1879, being a deficiency for the fiscal year 1880, $43.48, $392.45, $337.63, $389.18, $113.63, $7,377.32	8,653 69	
Amount due Louis F. Booth for transporting 17,058 pounds supplies from Chicago to Sioux City under contract of April 25, 1879, being a deficiency for the fiscal year 1880	22 12	
Amount due Louis F. Booth for transporting supplies to Sioux City, viz: 689,179 pounds from New York, 199,171 pounds from Chicago, and 11 pounds from Saint Louis, under contract of April 25, 1879, being a deficiency for the fiscal year 1880	3,212 09	
Amount due John C. Barr for transporting supplies to Fort Berthold Agency, viz: 3,151 pounds from Bismarck and 540 pounds from Saint Paul, and from Bismarck to Standing Rock Agency, 72,000 pounds, during the third and and fourth quarters, 1879, under open market arrangement, being a deficiency for the fiscal year 1880	448 72	
Amount due Chicago, Saint Paul, Milwaukee and Omaha Railway Company for transporting 37,526 pounds supplies from Hudson to Chandler, Wis., for the La Pointe Agency, during the first quarter, 1880, under open market arrang ement, being a deficiency for the fiscal year 1880	125 37	
Amount due James C. McVay for transporting supplies from Sioux City as follows: 14,160 pounds to Cheyenne River Agency, 13,725 pounds to Crow Creek Agency, 12,834 pounds to Flathead Agency, and 680 pounds to Rosebud Landing; and from Yankton 8,000 pounds to Lower Brulé Agency, and 94 pounds to Rosebud Landing, under contract of April 26, 1879, being a deficiency for the fiscal year 1880	426 13	
Amount due Nathan W. Wells for transporting supplies as follows: from New York to Ross Fork 684 pounds, and to Bryan 105 pounds, to Rawlins from Saint Louis 751 pounds, from Omaha 3,084 pounds, from Chicago 3,897 pounds, and from New York 5,379 ponnds; from Chicago to Ross Fork 3,980 pounds, and storage on goods at Rawlins (for White River) from October 1, 1879, to June 16, 1880, under contract of April 23, 1879, being a deficiency for the fiscal year 1880	1,475 46	

Estimates of deficiencies required for the Indian service—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.
Transportation of Indian supplies, 1880—Continued.		
Amount due Fred J. Keisel for transporting supplies to Uintah Agency, viz: from Chicago 878 pounds, and from Salt Lake 957 pounds, under contract of May 9, 1879, being a deficiency for the fiscal year 1880	$132 58	
This amount due sundry claimants for transporting supplies, viz: George S. Smith, $2.75; Levi Wilson, $448.84, $271.11, $47.53, $20.16, $127.20, $217.20, $34.12, $56.81, $4.85, $137.97, $23.36; F. J. Keisel, $202.41; Charles Babcock, $5.50; Moline Wagon Company, $19.50; Central Pacific Railroad Company, $90.33, $65.64; Milburn Wagon Company, $220; S. B. Coulson, $0.20; James McGarry, $411.27, $105.78; L. M. Buford, $6; being a deficiency for the fiscal year 1880	2,518 53	
This amount, or so much thereof as may be necessary for the payment of outstanding liabilities for transporting supplies, accounts for which have not been presented to this office, being a deficiency for the fiscal year 1880	5,000 00	
		$44,882 14
Contingencies Indian Department, 1880.		
Amount due Allen & Ackerly for feeding government team during January, March, and April, 1880, for the White Earth Agency, Minnesota, being a deficiency for the fiscal year 1880	2 65	
Amount due Central Pacific Railroad Company for transporting passengers over their lines during the third quarter 1879 and first and second quarters 1880, $126.50 and $15, being a deficiency for the fiscal year 1880	141 50	
Amount due M. E. Milford for services rendered as clerk at the Sac and Fox Agency, Indian Territory, during the second quarter 1880, being a deficiency for the fiscal year 1880	275 00	
Amount due Central Pacific Railroad Company for transporting passengers over their lines, being a deficiency for the fiscal year 1880	115 00	
Amount due W. J. P. De Lesdenier for services rendered as clerk at Sac and Fox Agency, Indian Territory, from October 31, 1879, to June 30, 1880, being a deficiency for the fiscal year 1880	695 05	
Amount due Union Pacific Railroad Company for transporting passengers over their lines, $196.45, $2.95, $27, $92.80, $77.50, $69.70, $168.20, $125.15, $130.50, being a deficiency for the fiscal year 1880	890 25	
Amount due Central Pacific Railroad Company for transporting passengers over their lines, $97, $188.05, $182.50, $134, being a deficiency for the fiscal year 1880	601 55	
Amount due Kansas Pacific Railroad Company for transporting passengers over their lines, $9.70, $20.30, $5.90, being a deficiency for the fiscal year 1880	35 90	
Amount due Chicago and Saint Paul Railroad Company for transporting passengers over their line, being a deficiency for the fiscal year 1880	16 60	
Amount due Sioux City and Pacific Railroad Company for transporting passengers over their line, being a deficiency for the fiscal year 1880	6 00	
This amount due sundry persons, as follows, viz: W. M. Stanley, $106.70; Jacob Kauffman, $47.01; W. D. Wheeler, $151.40; Francis Bloodgood, $20; John A. Sibbald, $153 49; E. A. Hayt, $16.58; Stanton Bros., $14; C. Newell, $29, being a deficiency for the fiscal year 1880	538 18	
		3,317 68
Transportation of Indian supplies, 1881.		
This amount, or so much thereof as may be necessary, for expenses of transportation of goods, provisions, and other articles for the various tribes of Indians, being a deficiency for the fiscal year 1881		30,000 00
Support of Arapahoes, Cheyennes, Apaches, Kiowas, Comanches, and Wichitas, 1881.		
This amount, or so much thereof as may be necessary, for the support and civilization of the Arapahoes, Cheyennes, Apaches, Kiowas, Comanches, and Wichitas for the balance of the fiscal year, being a deficiency for the fiscal year 1881		50,000 00
Contingencies Indian Department, 1881.		
This amount, or so much thereof as may be necessary, for traveling and incidental expenses of Indian agents and of their offices, and for pay of employés, being a deficiency for the fiscal year 1881		7,500 00
Support of Nez Percés of Joseph's band, 1881.		
This amount, or so much thereof as may be necessary, for the support and civilization of Joseph's band of Nez Percé Indians, in the Indian Territory, for the balance of the fiscal year, being a deficiency for the fiscal year 1881		5,000 00

Estimates of deficiencies required for the Indian service, &c.—Continued.

Detailed objects of expenditure, and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.
Fulfilling treaty with Yakamas.		
This amount to reimburse the Yakama Nation of Indians for the value of subsistence supplies purchased with funds belonging to said nation, and issued to Piute and Bannock Indians, held as prisoners of war at the Yakama Agency, Washington Territory, from February 10, 1879, to September 30, 1880, as per statement of James H. Wilbur, Indian agent, on file in the Indian Office		$12,914 21
Defending suits pending in the courts of North Carolina against the Eastern band of Cherokee Indians.		
This amount, or so much thereof as may be necessary, to defray the expenses heretofore or to be hereafter incurred in defending suits pending in the courts of North Carolina against the Eastern bands of Cherokee Indians		2,500 00
Support of Tabequache, Muache, Capote, Weeminuche, Yampa, Grand River, and Uintah bands of Utes, 1881.		
This amount, or so much thereof as may be necessary, for the support of Ute Indians in Colorado for the balance of the fiscal year, being a deficiency for the fiscal year 1881		25,000 00
Traveling expenses of Indian inspectors, 1881.		
This amount, or so much thereof as may be necessary, for necessary traveling expenses of five Indian inspectors for the balance of the fiscal year, being a deficiency for the fiscal year 1881		1,000 00
Contingencies, Indian Department, 1880.		
Amount due Wisconsin Central Railroad Company for transporting passengers over their line during May, 1880, being a deficiency for the fiscal year 1880		126 75
Total		193,144 35

Approved:

C. SCHURZ,
Secretary.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 57.

RED RIVER, TENNESSEE; CANAL TO CONNECT HEADWATERS OF SAVANNAH RIVER WITH THOSE OF THE HIAWASSEE AND TENNESSEE; AND RESOURCES OF CUMBERLAND RIVER VALLEY.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

A report of the Chief of Engineers relative to the examination of the Red River, Tennessee, and for canal to connect headwaters of Savannah River with those of the Hiawassee and Tennessee, and also of the resources of the country bordering on the Cumberland River, above the falls, in Kentucky.

JANUARY 25, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 24, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, dated the 22d instant, covering copies of reports from Maj. W. R. King, Corps of Engineers, on an examination of Red River, Tennessee, from Port Royal to its mouth, and of the headwaters of Savannah River in connection with those of the Hiawassee and Tennessee, with a view to their connection by a canal, made in compliance with the provisions of the river and harbor act of June 14, 1880.

Also copy of a report upon the resources of the country bordering on Cumberland River, above the falls, in Kentucky, being supplementary to the report transmitted to Congress March 1, 1879, on the survey of the Falls of the Cumberland, provided for in the river and harbor act of June 18, 1878.

ALEX. RAMSEY,
Secretary of War.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 22, 1881.

SIR: I have the honor to submit herewith copies of reports to this office from Maj. W. R. King, Corps of Engineers, of the results of an

examination of Red River, Tennessee, from Port Royal to its mouth, and of the headwaters of Savannah River in connection with those of the Hiawassee and Tennessee, with a view to their connection by a canal, made under his direction, to comply with the requirements of the river and harbor act of June 14, 1880.

And also a copy of a report upon the resources of the country bordering on Cumberland River, above the falls, in the State of Kentucky, being supplementary to the report transmitted to Congress March 1, 1879, on the survey of the Falls of the Cumberland, provided for in the river and harbor act of June 18, 1878.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Major General.

Hon. ALEXANDER RAMSEY,
Secretary of War.

EXAMINATION OF RED RIVER, FROM PORT ROYAL, MONTGOMERY COUNTY, TENNESSEE, TO ITS MOUTH.

UNITED STATES ENGINEER OFFICE,
Chattanooga, Tenn., January 13, 1881.

GENERAL: I have the honor to report that the examination of "Red River, Tennessee, from Port Royal to its mouth," has been completed, and to submit the report of Assistant Engineer C. A. Turrill, who made the examination.

It is believed that an expenditure of about $10,000 upon the 38 miles of river examined, in removing snags, overhanging trees, loose rock, and gravel, and in building a few stone dams, would enable the smaller boats from the Cumberland River to ascend this stream at medium stages of the water, and with sufficient frequency to carry off the heavier products of the neighboring country.

Before the *higher* stages of the water can be utilized in navigating this stream, it will be necessary that the bridges crossing it shall be provided with draws; and for low-water navigation, the amount of work necessary would be out of all proportion to the benefits derived, especially as all parts of the stream below Port Royal are within two or three miles of a railroad.

This river is in the collection district of New Orleans, and the nearest port of delivery, by water, is Paducah, Ky.

Respectfully submitted.

W. R. KING,
Major of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. C. A. TURRILL, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Nashville, Tenn., December 10, 1880.

MAJOR: I have the honor to submit the following report of the "examination of Red River, Tennessee, from Port Royal to its mouth," at Clarksville, Tenn., which was made in obedience to your instructions.

Red River is the principal tributary of the Cumberland River below Nashville. The length of river examined was estimated at 38.17 miles.

The compass and hand-level were used in obtaining the meanderings of the river and the approximate fall at the different islands and shoals passed, and soundings were obtained throughout sufficient to show the character of the stream.

I submit the following table of approximate results:

Localities.	Distance from Port Royal.	Length of shoal.	Least depth in channel at low-water.	Fall of each shoal.	Character of obstruction.	Improvement suggested.	Approximate quantities.
	Miles.	*Feet.*	*Feet.*	*Feet.*			*Cu. yds.*
Port Royal							
Port Royal Island	0.10	850	1.4	1.5	Overhanging trees and one gravel reef	Dredging	75
Crotzer's Island	0.59	1,800	0.9	2.5	Snags and trees; one gravel reef	Riprap dam	400
						Dredging	100
Can Shoal	1.60	600	1.6	0.6	No important obstructions		
Northington's Ripple	3.00	150	1.5	0.3	Overhanging trees		
Northington's Island	3.84	1,950	0.8	2.5	Two gravel reefs; trees in chute	Riprap dam	300
						Dredging	200
Lockhart's Island	8.33	4,850	0.8	3.2	Three gravel reefs; trees	Riprap dam	400
						Dredging	300
Murphy's Island	10.43	4,200	0.9	2.9	Three gravel reefs; trees	Riprap dam	400
						Dredging	125
Hancock's Island	12.23	3,200	1.0	1.6	Trees and loose rock; two gravel reefs	Riprap dam	300
						Dredging	200
Ford's Island	14.77	3,000	0.7	1.7	Snags and two gravel reefs	Riprap dam	400
						Dredging	150
Cave Spring Ford	16.00	100	1.7	0.1	No obstruction		
Killebrew's Island	16.04	1,200	1.0	1.0	Logs and trees; two gravel reefs	Dredging	150
Gardiner's Island	17.00	1,940	1.3	2.6	Trees and two gravel reefs	do	150
Herring's Fish Trap	19.95	50	1.5	0.2	Loose rock	do	5
Bradbury's Island	21.27	950	1.5	1.0	One gravel reef	do	50
Trigg's Island	22.28	4,200	0.7	4.0	Four gravel reefs	Riprap dam	500
						Dredging	400
Trigg's Ford	23.57	100	1.5	1.0	No obstruction		
Metcalf's Island	26.60	1,200	1.5	0.8	Two gravel reefs	Dredging	60
Small's Island	28.30	900	1.6	0.6	No obstruction		
Warfield's Island	30.07	500	0.8	0.8	One gravel reef	Dredging	75
Duck Island	31.32	600	1.4	0.7	One gravel reef	do	50
Gill's Ford	33.30	50	0.7	0.1	No obstruction		
Clarksville Turnpike bridge	35.50				Height above low-water mark: 41 feet	Boats would have to lower their chimneys to pass under these bridges.	
Louisville and Memphis Railroad bridge	36.16				Height above low-water mark: 52 feet		
Hopkinsville Turnpike bridge	38.00				Height above low-water mark: 48 feet		
Mouth Red River	38.18						

Between the islands and shoals above mentioned are pools ranging in depth from 8 feet to 12 feet at low-water. The banks are about 30 feet above low-water mark, and the average width of the river is 125 feet.

There are 2 turnpike and 1 railroad bridges. Two of the three have a central pier, but neither has a draw. Their heights above low-water mark are given in the table of results.

A small steamer has been in the habit of making trips between Clarksville and Port Royal, principally for the purpose of bringing out tobacco. This boat draws 15 inches, light. The river is navigable for this steamer about 4 months in the year.

The improvement suggested would probably not materially lengthen the boating season, but would enable small steamers to descend with safety and load to their full capacity.

The country drained by Red River is in a high state of cultivation. The principal products are corn, wheat, and tobacco. About 3,000 hogsheads of tobacco are annually hauled to Clarksville from the farms bordering the river, an average haul of 15 miles.

The portion of the river from Port Royal to Clarksville lies entirely in Montgomery County, Tennessee, although if an uninterrupted season of navigation was assured as far up as Port Royal, the character of the obstructions above are so unimportant that the same kind of navigation could be secured with but little expense as far up as Keysburg, Ky., 25 miles above Port Royal.

The highest flood-mark obtained was found to be 33.5 feet above low-water mark, at which height the bottom-lands are flooded.

I received valuable assistance and information during the survey from Capt. F. P. Gracey, M. H. Clark, and others, of Clarksville and vicinity.

Below I give an estimate of approximate quantities of work to be done, condensed from the table of results already given, in which is included an estimate of the entire amount of overhanging timber to be cut, which is by no means the least of the obstructions found, although a private subscription of $500 was expended in 1878 by citizens along the river in clearing some of the island chutes of trees.

Statement of cost of work.

Character of work.	Approximate quantities.	Estimated cost.
Riprap dam	2,700 cubic yards, at $2	$5,400 00
Dredging	2,185 cubic yards gravel, at $1	2,185 00
Overhanging timber	About 2,000 trees	1,000 00
Snags and loose rock	About 200 snags	600 00
Contingencies, 10 per cent		918 50
	Total	10,103 50

Very respectfully, your obedient servant,

C. A. TURRILL,
Assistant Engineer.

Maj. W. R. KING,
Corps of Engineers, U. S. A.

EXAMINATION FOR A CANAL TO CONNECT THE WATERS OF THE SAVANNAH RIVER WITH THOSE OF THE HIAWASSEE AND TENNESSEE.

UNITED STATES ENGINEER OFFICE,
Chattanooga, Tenn., January 14, 1881.

GENERAL: I have the honor to state that the examination of "the headwaters of the Savannah River in connection with the headwaters of the Hiawassee and Tennessee rivers," with a view to ascertaining if the waters of the last-mentioned streams can be united with those of the Savannah by means of a canal, has been completed, and to submit the following report thereon:

Referring to the small map, herewith, it will be seen that the connection of the waters in question would, if practicable, form a link in a chain of water communication between the Ohio River and the Atlantic coast; which, on account of its directness and climatic advantages, would be

HEADWATERS OF HIWASSEE, LITTLE TENNESSEE, AND SAVANNAH RIVERS.

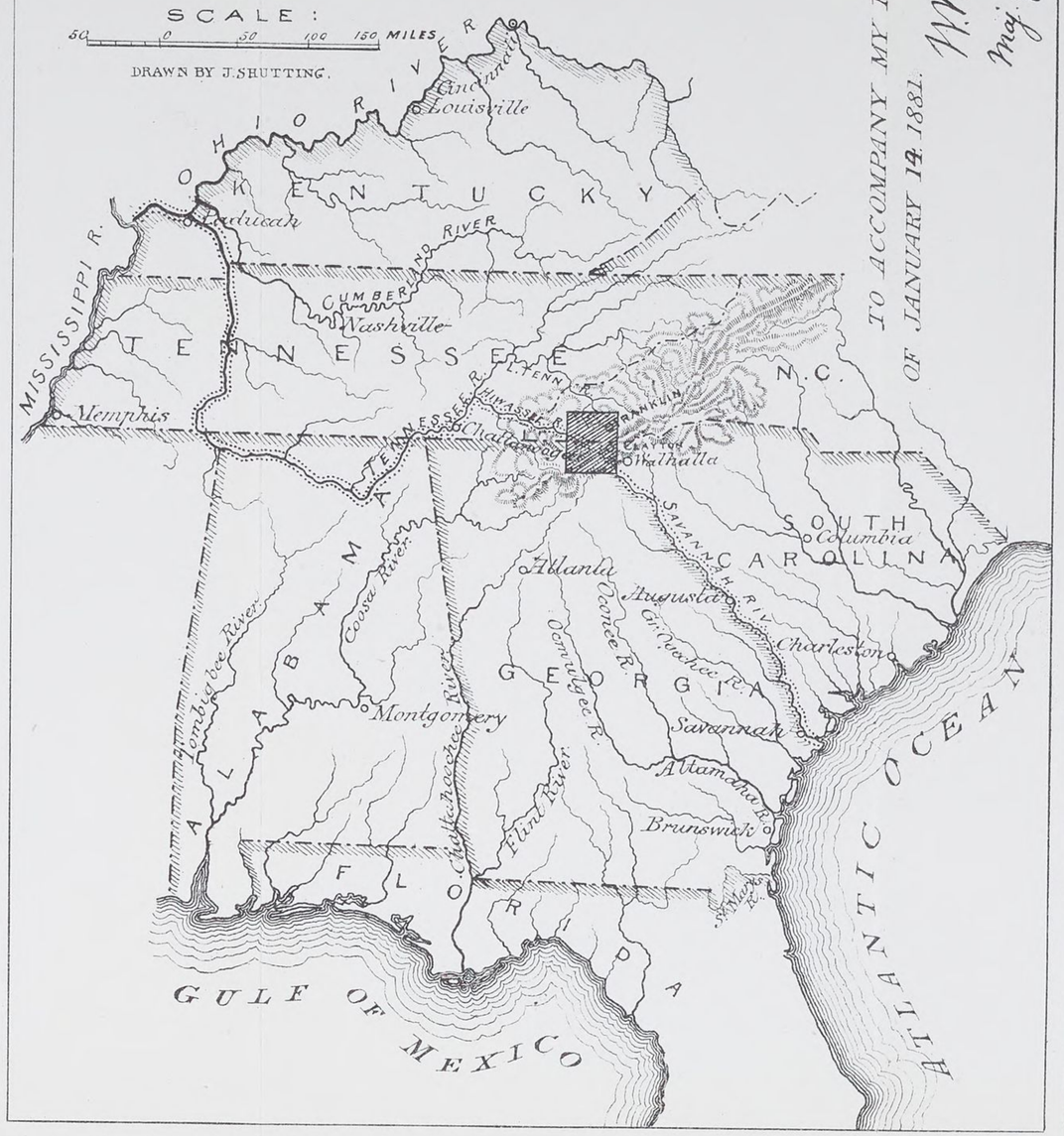
SCALE: 0 5 10 MILES.

See small square on adjoining map.

PROPOSED WATER ROUTE CONNECTING TENNESSEE AND SAVANNAH RIVERS.

SCALE: 50 0 50 100 150 MILES.

DRAWN BY J. SHUTTING.



TO ACCOMPANY MY REPORT OF JANUARY 14. 1881.

W. R. King
Maj. & Engrs

House Ex. Doc. No 57 3rd Sess. 46th Cong.

one of the most important transportation routes in the United States. In fact it would combine in a remarkable degree the advantages of the Mississippi River, which is open throughout the year, and of the Erie Canal, which, in spite of its being frozen up 5 months in the year, forms an invaluable artery of commerce between the great agricultural and manufacturing areas.

There is but one serious engineering question in regard to the feasibility of this transportation route, viz, the question of lockage. Had the topography of the country been such that navigable water of the Tennessee could have been reached from the Savannah by simply digging a canal across the divide, and without locks or even with a small number of them, the connection would no doubt have been made years ago and its commercial value would have been incalculable.

The existence of a summit, to be overcome by locks, detracts from the commercial value of the route in two ways, viz, it increases the cost of the improvement in the first instance, and, secondly, it increases the time and cost of transit which virtually lengthens the route, and thus tends to neutralize its advantages over other routes.

To ascertain exactly the extent of these disadvantages would require a detailed survey, which did not come within the scope of the present examination, but we can, in a general way, estimate some of the more important elements involved from data now available.

The route in question should be made navigable for the same class of boats that can navigate the Tennessee and Savannah rivers. The locks and canal trunk should, therefore, be of the same dimensions as those now building at Muscle Shoals on the Tennessee River, which will pass boats 300 feet long, 60 feet wide, and drawing 5 feet of water. Smaller boats could, of course, be provided for at considerably less cost, which might answer for local traffic; but the magnitude of the proposed work is such that, if undertaken at all, it should be done on a scale that would enable it to compete successfully with existing through routes.

Referring more particularly to the Hiawassee route, it is found that, from the navigable waters of the Hiawassee at Charleston, Tenn., to the summit at Hightower Gap, a difference of level of 1,300 feet must be overcome by lockage, and from the summit to Augusta, on the Savannah, 1,850 feet, the distance being 291 miles.

The total lockage would therefore be 3,150 feet, and assuming that the ordinary form of canal-lock is to be used, and that the canal trunk and dams can be so located as to admit of locks of an average lift of 15 feet, it would require 210 locks, or about three times the number on the Erie Canal.

An important question naturally comes in at this point as to whether a considerable number of these locks cannot be replaced to advantage by inclined planes, similar to the outlet lock above Georgetown, D. C. If so, a very great reduction in cost can be effected in that way. With this view Mr. Whinery was instructed to observe, as far as practicable, whether the topography of the country was favorable to this plan, and it appears from his examination that in the vicinity of the summit there are a number of places where the inclined plane could be used to advantage, and a more extended survey may show that it can be quite generally used. If so, the advantage to be expected will be apparent from the following rough estimate:

On the west side of Hightower Gap the fall is about 400 feet in 1 mile, which would require 27 locks at an average cost of, say, $150,000 each, or a total cost of $4,050,000. I believe the same lift can be overcome by an inclined plane for $500,000, or about one-eighth the cost of

the locks. In this estimate I have not undertaken to compare the relative costs of canal trunk, dams, &c., in the two cases, but have no doubt of the advantage being decidedly in favor of the inclined plane in these items, as well as in the economy of water, since it could, if necessary, be operated by steam, and there would then be no loss of water except from leakage and evaporation.

It will be seen, then, that the cost of the proposed improvement may by the use of inclined planes be greatly reduced from what the amount of lockage would seem to indicate, and there would also be a great saving in time of transit from the same cause.

As to the relative feasibility of the Little Tennessee and Hiawassee routes, it appears that the former has a considerable advantage in regard to a summit level without a tunnel, and to the amount of lockage; but the Hiawassee route is about 110 miles shorter, and strikes the Tennessee River below the mouth of the Clinch, which greatly increases its volume, and below the troublesome shoals between the mouth of the Hiawassee and that of the Little Tennessee.

In order to a full investigation of the merits of these routes the following information will be necessary:

1. The cost of improving the Hiawassee, Little Tennessee, and Savannah rivers up to the head of practicable slackwater navigation.

2. Exact profiles of the routes through Hightower and Rabun gaps, with cross-sections at suitable points, from which it can be determined to what extent the inclined-plane system can be utilized and estimates of the cost of building the necessary canal can be made.

3. A comparison of the cost, distances, lockage, &c., of the Hiawassee and Little Tennessee routes with each other, and with the corresponding elements of the route via Tennessee, Coosa, and Ocmulgee rivers surveyed in 1874. (See Appendix C C, page 658, Report of Chief of Engineers, 1875.)

By making use of certain railroad surveys that have been made over a part of the route, the necessary survey ought not to cost more than $15,000, and could easily be made during one summer.

I would therefore respectfully suggest an appropriation of that amount, if Congress decides to take further action in regard to this route.

A detailed account of Mr. Whinery's examination will be found in his report herewith.

Respectfully submitted.

W. R. KING,
Major of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. SAMUEL WHINERY, ASSISTANT ENGINEER.

WHEELER'S STATION, ALA., *December* 9, 1880.

MAJOR: I have the honor to submit the following report of an examination made in compliance with your instructions, of "the headwaters of the Savannah River, in connection with the headwaters of the Hiawassee and Tennessee rivers, with a view of ascertaining if a summit level can be secured of the waters of these respective streams, so as to unite them by a canal; that is to say, to ascertain if the waters of the Hiawassee and Tennessee rivers can be united with the waters of the Savannah River by means of a canal."

The examination was begun on the 1st day of November, 1880, and about ten days were occupied in the work; it extended from the junction of the Telula and Chattooga rivers, up the former and Dick's Creek to Hightower Gap, and thence down Hightower Creek to the Hiawassee River in one direction, and from same point up the

Chattooga and Sticoa Creek, to Rabun Gap, and thence down the Little Tennessee River to Franklin, N. C.

Pocket instruments only were used; the elevations were determined by aneroid barometers, three of which were used, and the elevations computed from the mean of the three readings, corrected for the temperature of the air and for the variations of the standard barometer at the Signal Service Office at Atlanta.

Wherever possible the elevations thus obtained were checked by readings at points on the various railroad surveys in the vicinity, whose elevations above the sea were known. When the observations were reduced it was found that, notwithstanding the unfavorable weather that prevailed during nearly the whole of the time, the results were very satisfactory.

The headwaters of the Hiawassee and Tennessee are separated from those of the Savannah by the Blue Ridge Mountains, and the contemplated canal must be carried over that range. The average elevation, above the sea, of its summit is about 3,000 feet, but there are depressions, or gaps, where the summit is much below that height. Through one of these depressions, the canal must pass, if built, and the feasibility of the whole project will depend largely upon the question whether it is practicable to construct and operate a canal over these summits. My examination was therefore mainly confined to these passes and the descent from them on either side.

The lowest gap between the headwaters of the Hiawassee and the Savannah rivers is Hightower Gap, situated about 6½ miles south of the Georgia and North Carolina line, and about 14 miles west of Clayton, Rabun County, Georgia. The summit of this gap is about 2,650 feet above the sea; its western slope is drained by Hightower Creek, which flows into the Hiawassee about 6 miles from the gap. Its junction with the Hiawassee has an elevation of about 1,900 feet above the sea, making the descent from the summit of the gap 750 feet; 400 feet of this descent occurs within the first mile from the summit, and the balance is pretty evenly distributed over the remainder of the distance.

The eastern slope of the gap is drained by Dick's Creek, a tributary of the Telula River, which it reaches in about 7 miles, flowing in a southeasterly direction; the elevation of its mouth is about 1,780 feet above sea level, a descent of 870 feet from the summit, about 400 feet of which occurs within 1½ miles of the summit.

Both Hightower Creek and Dick's Creek are small streams, and the question of a sufficient water supply for the summit level of a canal through this gap must be considered at the outset.

I assume that the canal contemplated should have locks not less than 20 feet by 120 feet, with lifts of about 12 feet each, and that provision should be made for a maximum passage of at least 100 boats per day.

According to the latest and best authorities on the subject, (see "Constructions des Canaux et des Chemins-de fer," Paris, 1861; Report on the Marne-Rhine Canal, by Inspector-General Graeff; also discussion of the above report by Col. W. E. Merrill, and Assistant Engineer Thomas S. Sedgwick, in reports on the survey for the extension of the Chesapeake and Ohio Canal in Report of Chief of Engineers for the year 1876, part 2, page 58, *et seq.*

I have adopted Colonel Sedgwick's factors, except for the value of *c*, which I have diminished to 6, for the following reasons:

1. While the loss by filtration, &c., is much greater during the first few months after the canal is filled, the number of boats, *n*, is likely to pass through the canal during that time, will, for obvious reasons, be far below, and probably only a small fraction of, the maximum allowed, and consequently the surplus of water allowed for lockage will more than supply the greater loss by filtration.

2. At Hightower Gap the greater part of the summit level will be in the summit tunnel, where the losses represented by *c* will be almost nothing. There would be no tunnel at Rabun Gap, but the summit level would be at least 2 miles shorter than that assumed at Hightower Gap, and the amount of water required there will not be greater than at Hightower) the amount of water necessary to operate the summit level of a canal is given by the formula:

$$C = c \times \frac{1\frac{1}{2}\ e\ n}{L}$$

in which

C = total cubic feet of water consumed, per running foot of the summit level per 24 hours.

c = cubic feet of water required to supply losses by filtration, evaporation, losses at locks, &c., = 6.

e = cubic prism of lift.

n = the maximum number of boats passing daily = 100.

Assuming that the summit level is 6 miles long, we find that the total amount of water required will be about 4,500,000 cubic feet for each 24 hours. This would re-

quire the constant discharge of a stream with a cross-section of 20 square feet, with a mean velocity of 3 feet per second.

Owing to the recent rains I could not ascertain accurately the minimum flow of the streams examined by me, but I am satisfied that both Dick's Creek and Hightower Creek combined will not furnish that amount of water until long after their beds drop below any practicable summit level for a canal through the gap under consideration. By fixing the summit level of the canal at an elevation of 2,000 feet above sea level, which would necessitate the construction of a tunnel about 5 miles long, it is probable that the supply of these streams at that elevation, supplemented by storage-reservoirs, would furnish an adequate supply of water to work the canal. Suitable locations for such reservoirs can, I think, be found in the valleys of the tributaries of Hightower Creek.

From the western portal of this tunnel the canal would follow down the valley of Hightower Creek to the Hiawassee River, a distance of 3½ miles. The lockage in this distance would be about 100 feet, and the topography is very favorable for the construction of a canal.

I am not aware that any surveys or examinations of Hiawassee River, with the view of making it navigable, have been made between the mouth of Hightower Creek and Savannah Ford; an examination, however, was made in 1874 from Savannah Ford to the mouth of the river, and estimates submitted for its improvement, by securing a channel of 2 feet in depth at low-water. (See Report of Chief of Engineers for 1875, Part I, pages 809 to 813.)

But the fact that it flows through a mountainous region, and that the fall from the mouth of Hightower Creek to the mouth of Hiawassee is at least 1,200 feet, or about 12 feet to the mile, would indicate that such improvement would involve great engineering difficulties and heavy expense.

From the eastern portal of the tunnel the canal would descend Dick's Creek to its junction with Telula, or, as it is called at this point, Terroree River, and thence down that stream to the navigable waters of the Savannah. Dick's Creek is a rapidly descending stream, with a narrow and tortuous valley, hemmed in by precipitous hills, and the construction of a canal along it would be very difficult and expensive. The descent from the eastern portal of the tunnel to Telula River is about 320 feet, and the lockage would be pretty evenly distributed over the whole distance of about 3¼ miles. Telula River, at the junction of Dick's Creek, is a stream about 65 feet wide and 1½ feet deep, and from this point on the method of improvement by slack-water navigation might be adopted. The rate of descent to the head of Telula Falls, a distance of 20 miles, is about 15 feet per mile, and no very serious obstacle would be met with in this distance, though the work would be expensive. At Telula Falls the river cuts through a spur of Telula or Chattahoochee Ridge. The stream rushes through a narrow cañon with perpendicular walls from 100 to 500 feet high. There are a number of almost perpendicular falls from 25 to 90 feet, and between these the stream is a rushing torrent.

From the head of the falls to the junction of the Chattooga, a distance of 4 miles, the descent is about 680 feet. This part of the river would present very great engineering difficulties, and could only be made navigable at enormous expense.

The elevation above the sea of the junction of the Telula and Chattooga rivers, as determined from the readings of the aneroid barometers, is 780 feet. This elevation is probably not far from correct. The elevation of the river at the crossing of the Atlanta and Charlotte Air Line Railroad, 10 miles below the junction, as furnished me by Ira Sage, esq., chief engineer of the road, is 709 feet, and the fall of the river between the two points is given by Mr. Carson, in the report referred to below, as 105 feet, which would make the elevation of the junction of the rivers 814 feet.

The Savannah River, below the junction of the Telula and the Chattooga, was examined in the autumn of 1878, by Mr. J. P. Carson, civil engineer, under instruction of General Gillmore, of the Engineer Corps, and his report will be found on page 750, Part I, of the Annual Report of the Chief of Engineers for 1879.

A canal connecting the headwaters of the Savannah and the Little Tennessee must pass through Rabun Gap, one of the most remarkable depressions in the Blue Ridge. It is situated 2½ miles directly north of Clayton, Ga. The elevation of its summit above sea level, as determined by the surveys for the old Blue Ridge Railroad, and confirmed by later surveys, is 2,044 feet. The turnpike from Clayton to Franklin, N. C., passes through it, and, to the traveler passing along this road, it has the appearance of a narrow valley separating two parallel ridges, rather than a gap in a great dividing ridge.

Considerable streams flow into it from the mountains on either side, and so low is the summit that some of these could without difficulty be made to flow at will into either the Tennessee or the Savannah River. No tunnel would be required to construct a canal through this gap, and the depth of the summit cut need not be greater than the saving of lockage would justify.

Within a short distance northward a number of considerable streams converge to

form Little Tennessee River, and at the mouth of Mill Creek, 2½ miles from the summit, the surface of the stream is only 35 feet below the summit. At this point the volume of the stream was, when I examined it, fully 12,000,000 cubic feet per 24 hours. I made numerous inquiries of citizens in the vicinity, and their statements agreed that the stream never shrank to less than two-thirds of its volume at that time.

Adopting the same requirements for the water-supply of the proposed canal as at Hightower Gap, I think there can be no doubt that an abundance of water to supply the summit level can be had at this point.

Descending northward, the canal would follow the valley of the Little Tennessee to Franklin, N. C. The topography of this valley and the character of the stream is well suited to the construction of such a work. The fall of the stream is very regular and but little over 5 feet per mile. The method of slack-water navigation might be adopted with advantage. At Franklin the river is 150 feet wide. The fluctuation due to freshets does not much exceed 10 feet in height.

My examination did not extend below this point.

An examination of the river from Franklin to the mouth of Citico Creek was made by Mr. Maurice Kingsley, under direction of Major McFarland, in the year 1875, a report of which will be found in the Report of the Chief of Engineers for 1876, Part I, page 716. Mr. Kingsley had examined that part of the river from Citico Creek to its mouth in the previous season, a report of which will be found in the Report of the Chief of Engineers, as above referred to.

The descent south of Rabun Gap would be via Clayton, down Chechero or Sticoa Creek to the Chattooga, and thence to the confluence of the Chattooga and Telula. The distance from Rabun Gap to the mouth of Chattooga is about 24 miles, and the difference in elevation of the two points is about 1,260 feet. The character of the Sticoa and Chattooga is not very different from the Telula, except that the descent is more evenly distributed, there being no obstructions, such as Telula Falls, on the Chattooga.

As to the relative merits of the two routes examined there can be no doubt that, on the score of practicability and economy of construction and operation, the advantage is largely with the Rabun Gap route.

No summit tunnel nor feed-reservoirs are necessary on that route, and there is no question of an ample supply of water.

The summit level at Hightower Gap has about the same elevation above the sea as that at Rabun Gap, and the amount of lockage would be practically the same on each route, but at Hightower Gap a tunnel 5 miles long and extensive storage reservoirs must be constructed, and the supply of water is not as ample and reliable as at Rabun Gap.

These remarks apply only to that part of each route examined by me, and I venture no opinion as to the relative merits and economy of construction over other portions of either route. On the other hand, the advantage of directness and saving of distance is largely in favor of the Hiawassee route.

The distance from Chattanooga to Augusta via Tennessee River, Little Tennessee River, Rabun Gap, and Savannah River is in round numbers 460 miles, while the distance between the same points via the Tennessee River, Hiawassee River, Hightower Gap, and Savannah River is only 350 miles, a difference in favor of the latter route of 110 miles.

It is proper, however, to call attention to the fact that the distance from Augusta to the navigable waters of the Tennessee River, to Citico Creek, on Little Tennessee, and to Charleston, on the Hiawassee, is almost the same, about 290 miles.

While from a purely engineering point of view it is entirely practicable to connect the headwaters of the Tennessee River with those of the Savannah by a canal, it may not be so from an economic or commercial point of view. I am not certain that the language of the appropriation act providing for this examination authorizes the discussion of this branch of the subject, and I venture to do so very briefly.

I believe that the summit level of the proposed canal by either of the routes considered would be at a greater elevation above the sea than any one heretofore operated, or indeed seriously contemplated.

The summit level of the Chesapeake and Ohio Canal, as located a few years since, is 1,972 feet; that of the James River and Kanawha Canal, as finally located in 1868, is 1,700 feet above sea level. The excessive lockage on these proposed canals has been, and is, a very serious argument against the propriety of building them.

The Erie canal has 654 feet of lockage between Lake Erie and Troy. The Genesee Valley Canal overcomes a summit of 1,489 feet above tide-water, and the Morris and Essex Canal overcomes a summit of 1,557 feet above the sea.

The amount of lockage that must be used on the routes that we are considering to overcome the summit elevation of 2,000 feet, is, in round numbers, between Charleston, Tenn., and Hightower Gap, 1,300 feet; between the mouth of Citico Creek and Rabun Gap, 1,100 feet, and between the summit at either gap and Augusta, 1,850 feet. In this estimate is included both the canal and slack-water lockage on the routes.

I have not been able to obtain any reliable data as to the cost of lockage per ton of freight for each vertical foot raised or lowered on American canals.

It is usual to approximate this cost by estimating each lock as adding some assumed amount to the actual length of the canal. This assumed increase of length has been variously estimated at from ½ to 1½ miles for each lock of, say, 12 feet lift. From the information at hand I think it would be reasonable to assume that each 12 feet of lockage on these canals would be equivalent to adding 1 mile to the length of the canal.

On this basis the equated length of these canals would be:

	Miles.
Distance from Citico Creek to Rabun Gap	109
Add 1 mile for each 12 feet of lockage	92
Equated distance, Citico to Rabun Gap	201
Rabun Gap to Augusta	180
Add for 1,850 feet of lockage	154
Equated distance from Rabun Gap to Augusta	334
Total equated distance from Citico Creek to Augusta	535
Add distance from Chattanooga to Citico Creek	166
Equated distance from Chattanooga to Augusta	701

HIAWASSEE ROUTE.

	Miles.
Distance from Charleston, Tenn., to Hightower Gap	106
Add for 1,300 feet of lockage	108
Equated distance, Charleston to Hightower Gap	214
Distance from Hightower Gap to Augusta	185
Add for 1,850 feet of lockage	154
Equated distance from Hightower Gap to Augusta	339
Total equated distance from Charleston to Augusta	553
Add distance from Chattanooga to Charleston	55
Total equated distance from Chattanooga to Augusta	608

It will thus be seen that the excessive lockage on these lines practically increases the distance from Chattanooga to Augusta via Rabun Gap 54 per cent., and via Hightower Gap, 75 per cent., or in other words, the cost of operating either of these canals will be 54 per cent. in the one case and 75 per cent. in the other greater than if there was an unobstructed level canal between the two points.

No estimate that would be better than mere guess work of the cost of constructing these improvements can be arrived at without, at least, a preliminary instrumental survey of the whole of each route, but from the nature of the region traversed it is certain that they would be enormously expensive.

If it is thought that the requirements of commerce render the construction of a canal necessary over one of these routes, a complete and careful survey should be made of both, in order to determine accurately the comparative cost and relative merits of each.

I may add that materials for the construction of such works, such as timber and stone, of first-rate quality, are abundant over the whole of either route.

Very respectfully, your obedient servant,

S. WHINERY,
Assistant Engineer.

Maj. W. R. KING,
Corps of Engineers, U. S. A.

REPORT UPON THE RESOURCES OF THE COUNTRY BORDERING ON CUMBERLAND RIVER, ABOVE THE FALLS, IN THE STATE OF KENTUCKY, BEING SUPPLEMENTARY TO THE REPORT ON THE SURVEY OF THE FALLS OF THE CUMBERLAND (PROVIDED FOR IN RIVER AND HARBOR ACT OF JUNE 18, 1878), WHICH WAS TRANSMITTED TO CONGRESS MARCH 1, 1879, AND PRINTED IN HOUSE OF REPRESENTATIVES EXECUTIVE DOCUMENT NO. 106, FORTY-FIFTH CONGRESS, THIRD SESSION.

UNITED STATES ENGINEER OFFICE,
Chattanooga, Tenn., January 14, 1881.

GENERAL: I have the honor to forward herewith a report by Lieut. W. L. Marshall, United States Engineers, of a reconnaissance made by him of the country bordering on the Cumberland River, above the falls, in the State of Kentucky.

This report is supplementary to one made last season by Assistant Engineer S. Whinery on the improvement of the Cumberland Falls (pages 1280–1282, part 2, Report of Chief of Engineers, 1879), and was on my recommendation authorized by the Chief of Engineers, by letter of September 13, 1880, in view of the fact that Mr. Whinery's report had been complained of as unjust to the section of country interested in the proposed improvement.

Lieutenant Marshall's instructions required him to give his principal attention to the material resources of the country above the falls, and incidentally to make such observations as will be of service in case any improvement of the river above the falls is undertaken hereafter.

The report is quite full, and, as far as I am able to judge, the conclusions are correct; and I would respectfully recommend that it be forwarded and made supplementary to Mr. Whinery's report.

Respectfully submitted.

W. R. KING,
Major of Engineers.

The CHIEF OF ENGINEERS, *U. S. A.*

REPORT OF LIEUT. W. L. MARSHALL, CORPS OF ENGINEERS.

UNITED STATES ENGINEER OFFICE,
Rome, Ga., December 17, 1880.

MAJOR: I have the honor to submit the following report upon the resources of the drainage area of the Cumberland River, above the Great Falls, in Whitley County, Kentucky. This report is intended as an appendix, or continuation of the report of Assistant Engineer S. Whinery, upon the proposed improvement of the falls, accompanying your annual report for 1879.

In this report I have made use of all accessible information, notably of the publications of the Kentucky State Geological Survey, and of the reports of engineers engaged in making surveys and estimates for the system of slackwater navigation inaugurated by the State of Kentucky in 1835 and 1837. I have quoted freely from these sources, in some cases without reference.

The information collected by myself was secured on an examination made by your order, between the dates October 24 and November 11, 1880, when I visited this area and traversed the counties of Bell, Knox, Whitley, and parts of Harlan, which counties embrace the entire drainage area of the Upper Cumberland River.

The area in question is about 2,500 square miles in extent.

Population in 1870	24,718
Taxable property in 1870	$2,153,290
Annual products, agricultural and manufactures	972,204

	Per acre.
Average value of land in Harlan County	$0 70
Average value of land in Bell County	1 63
Average value of land in Knox County	3 45
Average value of land in Whitley County	2 49

This area is but thinly settled by a poor mountain population, and its natural resources very little developed or known; I saw, however, sufficient to satisfy myself of its great value as a coal, iron, and timber producing region, and of its capacity to sustain a large population.

TOPOGRAPHICAL FEATURES.

The Upper Cumberland drainage is entirely mountainous. About its headwaters it drains the area included between the Pine and Cumberland mountains, and the slopes of the Black Mountains in Harlan County; cutting through Pine Mountain in a deep cut gorge, at Pineville, near Cumberland Ford, in Bell County, it flows through a valley of greater or less extent, the bottom lands ranging in width from a few hundred yards to a mile or more, receiving many tributaries, through Knox and Whitley counties; the mountains gradually lowering in height and steepness from 1,500 to 2,000 feet above the drainage in Harlan County to from 400 to 1,200 feet in Knox and Whitley counties. At the mouth of Jellico Creek, in Whitley County, it enters a cañon or gorge, cut in the carboniferous conglomerate sandstone of the Cumberland plateau, and continues its course in this cañon beyond the limits of this examination. Above Pineville the mountain forms fill up the entire area included between the approximately parallel chains of the Cumberland and Pine mountains. There is but little bottom land along the streams, but upon he summits and flanks of the mountains are numerous little park-like valleys, coves, and swales well watered, and sweeping, rolling areas, adapted for cultivation. Lower down, in Knox and Whitley counties, the mountains recede from the river, in places steep and abrupt, in others presenting rolling uplands or plateaus of considerable extent, heavily timbered, and susceptible of cultivation.

The creeks and branches of the Cumberland are all fed by living springs, and upon them are found coves, bottoms, and plats of small extent, but quite fertile. Of the entire drainage area of the Upper Cumberland, I should judge, after riding over it, that not exceeding 35 per cent. is sufficiently level for cultivation, and that from 70 to 90 per cent. is covered by the unbroken primeval forest growth.

RESOURCES.

Soil.—Near the headwaters of the Cumberland, in Harlan County, in the Black Mountains, the soil is unusually strong for a carboniferous formation. Deciduous leaves, shrubs, and wood, decomposing for ages, mingled with the silicates of the rocks, rich in the alkalies, and with the calcareous material of the black shales, have produced a black, rich soil, in places several feet in depth, on the mountain summits and slopes, from which, by the action of the elements, the bottom lands and coves have been enriched.

Lower down, in Bell, Knox, and Whitley counties, the soil, though more gravelly and sandy and not so strong, is still capable of producing fair crops of the cereals and vegetables, even upon the summits of the ridges and plateaus. Owing, however, to the lack of transportation, the mountaineers raise no grain for shipment beyond the limits of their counties, but the production is confined to their own needs; the entire agricultural productions of these counties, for sale, consisting in live stock and wool.

For producing sheep this region is well adapted, the mountain grasses and shrubs affording extensive pasturage and browsing areas.

The strength of the soil may be best seen by the growth and character of the timber, walnut, hickory, white and blue ash, chestnut, poplar, birch, linden, gum; the first four mentioned of which are produced only by good soils.

John R. Proctor, State geologist of Kentucky, in his work on the "Resources of the North Cumberland Valley," says: The soils of this "entire region surpass any coal-measure soils within my knowledge"; compared, however, with the soils of the limestone belt of Kentucky and Tennessee they would be considered quite poor. In wheat they produce from 6 to 12 bushels per acre; in corn, from 15 to 50 bushels. The bottoms produce good grass, hay, and sorghum, also fair tobacco; but it is not as an agricultural region that this area will be populated and owe its future importance and development, even though the soil is capable of sustaining any population it may ever have.

Timber.—As already stated, the area covered by the primeval forests comprises from 70 to 90 per cent. (estimated) of the drainage area of the Upper Cumberland above the falls.

To these falls, and the lack of railroad and water transportation, may be due the nearly primitive appearance of this region. Thousands of square miles exist in Eastern Kentucky, broken only at intervals by narrow bottoms destitute of trees, and by small cultivated patches, heavily timbered by immense white oak, hickory of several varieties, black and white walnut, the former often reaching 5 feet in diameter of trunk, yellow poplar of immense size and length of stem, curly maple, and a species of gum, of light color and curly grain, which is said to be scarcely inferior to the maple as an ornamental wood, birch, linden, white and blue ash, long leaved and spruce pine; the pines, however, are not abundant nor of great size. The greatest growth of walnut and poplar, ash, and hickory is found in Harlan County, on the rich flanks and coves of the Black Mountains, although there is considerable walnut and poplar in Bell County and in the little coves and rich spots lower down the river, in Knox and Whitley counties. During the past 4 years great inroads have been made in Bell, Knox, and Whitley counties on the walnut and poplar, and in a very few years all the large walnut trees within reach of the river and its tributaries will have been removed. The trade in logs so far has been confined nearly exclusively to walnut; other timber than walnut and poplar has not as yet been cut or rafted to any extent. At present several companies are engaged in securing walnut logs, which are floated down to saw-mills, of which one is at the mouth of Jellico Creek, in Whitley County, and others, below the falls, at Point Burnside in Pulaski County.

From what I could see and learn I estimated that within 5 years all the walnut timber within reach of the Cumberland River will have disappeared. The demand is constantly increasing and the forests becoming very much reduced, but the quantity of white oak, poplar, hickory, ash, and other woods is immense and in demand. Of these the white oak is greatly the most abundant, but as it will not always float it cannot so readily be marketed.

Coal.—The thickness of the coal measures in this area approximates 2,000 feet above drainage. In this thickness, according to the Kentucky Geological Corps, there are about 20 distinct beds of coal, of which at least 6 are of good quality and workable thickness. I visited many openings in the counties of Bell, Knox, and Harlan, within easy reach of the Cumberland River and the roads of the country, near to but above the bottoms and drainage, varying in thickness from 28 inches in Knox County to 5 feet 4 inches in Harlan County. Near Flat Lick, in Knox County, there are 6 deposits of workable thickness, 4 feet, 3 feet, 5 feet 3 inches, 4 feet 8 inches, 4 feet 5 inches, 31 inches, the last named being a good cannel coal, but it is in Harlan County that the greatest development of coal beds exists. A persistent bed 8 feet thick is reported, and one of 14 feet in thickness, but I visited no vein of greater thickness than 5 feet 4 inches in that county, but as the 8-foot bed and also a 6-foot bed is found just over the line, in Southwest Virginia, in the same coal field, I have little doubt of the existence of these thick veins in Harlan County, Kentucky. In Knox and Bell counties many well-to-do-farmers have open coal banks near their houses, and I followed a 4-foot vein for 8 miles within loading distance of the proposed route of the Cincinnati, Cumberland Gap and Charleston Railroad. The thick veins are not found in the lower part of the area under consideration, those worked at Livingston, the present terminus of the Louisville and Nashville Railroad, Knoxville Branch, varying from 29 inches to 39 inches in thickness. Similar veins, I understand, are worked near the mouth of Rock Castle River, above Smith's Shoals. John R. Proctor, State geologist of Kentucky, in his report of the "Resources of the North Cumberland Valley" says, "The coal measures have here a thickness above drainage * * * thicker than elsewhere in America. * * * Enough has been done to establish the existence of many beds of workable thickness and of very superior quality."

Professor Crandall, in volume IV, Kentucky Geological Reports, second series, says:

"The thickness of the coal measures is greater by many hundred feet than in any other part of Kentucky. The number of coals is also greater. * * * The quality of the coals of this valley is most excellent. The proportion of ash and sulphur is very low in all that have been analyzed, with the exception of one cannel coal, and the fixed carbon is high."

In Virginia, near the head of Powell's River, the coals of the same field have been examined by Prof. J. J. Stevenson, who remarks of the 6-foot vein: "At one place where the bed had been dug into a little, it yields the best kind of bituminous coal, fat and coking, but friable, with no appearance of sulphur, and making no clinker. It is a good blacksmith coal, and no doubt will make a good coke; a piece of ill-made coke shows that the best coke can be got from it."

Also of the 8-foot vein: "This 8-foot seam will yield a coke with considerably less than *three per cent. of ash*, and with but a little more than $\frac{5}{10}$ of a per cent. of sulphur. Such would be a marvelously rich coke, the percentage of fixed carbon being somewhat more than 96. The Connellsville coke has somewhat less than 90 per cent. of fixed carbon; the ash is between 9 and 10 per cent., while the average sulphur is about $\frac{8}{10}$ of a per cent."

Analyses of the Cumberland coals and the Pennsylvania coals, made by competent

chemists, compare very favorably for the Cumberland coals, and demonstrate their superiority for manufacturing purposes. The thickness of the veins, their easy access, locally, their position above the drainage, and the cheapness with which they can be mined, will undoubtedly cause them to be sought when means of transportation are furnished. It exists in inexhaustible quantity, everywhere exposed to be opened by simple adits. Coal is now delivered in Pineville at $1 per ton.

Iron.—I have learned of no beds of iron ore of *known thickness or extent* in this area. Many specimens of iron ore, mostly carbonates and brown hematites or limonites, were shown me, picked up from the beds of the creeks and by farmers in plowing their fields. There has been no search made for iron, but as this coal-field elsewhere furnishes many beds of iron ore, it doubtless exists in close proximity to the coal. I heard of iron ore and saw specimens from near Barboursville, in Knox County, from the flanks of Pine Mountain, in Bell County, from the Elk Fork, from Cumberland Falls, and from various points in the southern part of Whitley County, mostly limonites and carbonates. The extent of any bed is not known to me. But on the southeast flank of the Cumberland Mountains extend very persistent deposits of the red (fossil) hematite ore in almost inexhaustible quantity, within 8 miles of the coal deposits on Yellow Creek, near Cumberland Gap, and within easy access (further west) of the coal on Elk Creek and the Clear Fork of Cumberland River, in Whitley County; also in Pulaski County, Kentucky, below the falls, are many known deposits of limonite ore. Pine Mountain will almost certainly furnish near its base the red hematite (fossil) ore, which is persistent in that formation from Pennsylvania to Alabama; in fact, pieces of this ore have already been found near the base of this mountain, but not in place, as the foot is covered up in débris from the mountain itself and with vegetable matter.

From the above facts it may be seen that the natural resources of the Upper Cumberland Valley are great but undeveloped. As an agricultural region it will be of no value particularly. For its capabilities as a manufacturing region, as a possible source of production of iron, steel, coal, timber, and manufactures of wood, it cannot well be surpassed by any similar area in America.

So far the timber only has been utilized, and that but sparingly, the insufficiency of the Cumberland River as a means of transportation, due to its many mill-dams, shoals, and falls, and the necessity for breaking up the rafts to pass the falls, being a great hindrance to the further development of even this industry.

This area can never be of any great value without transportation facilities, and of these railroads alone can meet the demands of the country. The torrential nature of the Cumberland River, will, even with a complete system of slackwater, forever prevent continuous safe navigation throughout the year over the part of the river between the mouth of Jellico Creek and the foot of Smith's Shoals, unless some system of slackwater or canalization may be devised, at practicable cost, secure against the rises and freshets of this stream.

THE CUMBERLAND RIVER.

Your instructions required me to examine incidentally the Cumberland River, in the neighborhood of, and above, the falls, and to report any facts bearing upon its improvement, &c., and my conclusions based thereon.

I have the honor to submit the following remarks based upon a cursory examination of the stream, from Harlan County line to Cumberland Falls, and upon information derived from raftsmen and the inhabitants of its valley.

The Cumberland, above the Great Falls, may for description be divided into three sections, each differing distinctly in navigable qualities and characteristics from the others:

I. From the headwaters of the river in Harlan County, Kentucky, to Cumberland Ford, in Bell County.

II. From Cumberland Ford to the mouth of Jellico Creek, in Whitley County, about 110 miles by water.

III. From the mouth of Jellico Creek to the Great Falls, in Whitley County, about 16 miles by water.

I. In the first, after collecting the water of its upper tributaries, the main stream possesses the characteristics of all mountain streams near their head—rapid, with great slope, comparatively short pools, rocky and steep shoals; it cannot be improved save at great expense for steamboat navigation, or even for barges down-stream, except during times of very high freshets. All that can be done for this section is to remove the rocks above low-water mark, and cut through the worst rock reefs, to allow the safe rafting of logs. Poor Fork, Clover Fork, Yellow Creek, and in fact all the tributaries of the Cumberland, at high water, have sufficient depth of water to bring down logs singly to the main stream, there to be rafted. At low-water the river is insignificant.

II. From Cumberland Ford, at Pineville, to the mouth of Jellico Creek, the river varies in width from 100 to 300 feet, with long pools of slackwater, and short, rapid

shoals of rock and bowlders; from the height of the mill-dams, and the length of the backwater occasioned by them, I estimate the average fall at about 1½ feet to the mile. A short distance below Cumberland Ford, at Barboursville, in the Horseshoe Bend above Williamsburg, at Bolting Shoals, and below the dam at Williamsburg, are quite formidable shoals of rock and gravel, over which, at low-water, in less than ¼ of a mile, are falls of from 18 inches to 3 feet (estimated).

Between Pineville and the mouth of Jellico Creek are 9 mill-dams averaging 6 feet in height each; two of them are 9 feet, two are 7, and the rest 6 feet or less in height, viz:

1. Ely's mill-dam, 5 miles by land below Pineville, 9 feet high.
2. Bay's mill, just above Rock House Ford, 4½ miles above Barboursville by land.
3. Barboursville mill-dam, 9 feet high; this dam is at the head of quite a shoal with a fall of at least 3 feet in 2,000 feet.
4. McNeill's mill-dam, 7 miles below Barboursville by land, 7 feet high.
5. Evan's mill-dam, about 4 miles by water below McNeill's, 4 feet high; said to back water to McNeill's dam.
6. Loudon mill-dam, 18 miles by land below Barboursville, and 10 miles by land above Williamsburg.
7. Sutton's mill-dam, 6 miles above Williamsburg, by land.
8. Williamsburg dam, 6 feet high.
9. Jones's mill-dam, 6 miles by water below Williamsburg.

These dams are for the most part quite substantially built of cribs of round logs filled with stone; are not provided with chutes and aprons, and are the greatest obstructions to rafting lumber on the Upper Cumberland, since the stage of water must be so high as to allow rafts to pass over without breaking to pieces. I was informed that there are on an average about 7 freshets or tides in the course of a year, when this can be safely done; if they were removed there would be at least 3 months in the year in all when rafting could be securely carried on. In this section the mill-dams must by their slackwater conceal many minor shoals and obstructions, but from appearances and from the comparatively slight fall in the river, I would estimate that with an expenditure of not exceeding $500 per mile navigation for light steamers (by warping over the steeper shoals) might be secured from Pineville to the mouth of Jellico Creek, for about 4 months in the year, but this would require further examination to determine.

There is a rainfall in the Upper Cumberland Valley of about 60 inches per annum. This great rainfall coming principally in the winter and spring months over a mountainous area, drained by streams with steep slopes, causes in the Upper Cumberland sudden rises and freshets, which nearly as rapidly subside. At Pineville, where the slope of the river is greatest, the river rises 28 feet; at Barboursville, 32 feet. Rises of 30 feet have occurred in 24 hours. On the crest of Cumberland Falls the highest rise is about 6 feet; at the foot of Smith's Shoals 73 feet. During a dry summer, when the springs dry up, the river nearly disappears. When I visited the Cumberland, November 1, the discharge of the river at Barboursville was not exceeding 90 cubic feet per second; at extreme low-water it scarcely furnishes water to run continuously a 20-inch turbine wheel under a head of 8 feet at the mill there.

III. From the mouth of Jellico Creek to the Cumberland Falls the river flows through a very poor, rugged country in a deep gorge cut in the Cumberland Plateau, in a succession of rapids and shoals, with short pools of still water between them; it is not so much obstructed by rocks and bowlders as just below the falls, but the river is so rapid and dangerous therefrom that rafts, abandoned at the mouth of Jellico Creek, are broken up and pass the falls as single logs. No improvement of this part of the river which would allow up-stream navigation, or, indeed, absolutely safe down-stream navigation for coal barges, can be made, except at great expense.

In a distance of about 12 miles or less, the following shoals occur, having falls over them (estimated) at from 2 to 6 feet over short distances. The draw, or diminution of head over the great Falls at time of high-water, increases the fall very materially for some distance above them.

1, Rough Shoal; 2, Terrapin Shoal; 3, Bee Shoal; 4, Buck Shoal; 5, Long Shoal; 6, Slick Shoal; 7, The Pitch; 8, Thunderstruck Shoal; 9, Bunche's Island; 10, Devil's Race—all quite formidable obstacles.

The most that can be done for this section, unless a complete system of slackwater is devised and executed, is to remove the rock and drift from the channel, to form chutes over the shoals for logs and rafts. A close reconnaissance would be necessary to determine the cost.

As bearing upon the subject of the improvement ot the Cumberland Falls, the following additional data concerning the falls and the river below are given:

Height of falls and rapid immediately above, by Assistant Engineer S. Whinery's survey ..... 65.2 feet.
Same by a survey made by the State of Kentucky, in 1837 ..... 70.0 feet.

Whinery's survey was made when the river was several feet above low-water, which may account for the difference. Whinery's estimate for canalling the falls is $368,500, which is not a liberal one, even for the contracted canal proposed.

In 1837 a survey was made by the State of Kentucky, from the Cumberland Falls, in Whitley County, to the Kentucky State line, 173 miles.

From the falls to the mouth of Laurel River, 10 miles, the descent in the water-level was found to be 85 feet (or 8.5 feet to the mile); from the mouth of Laurel River to the head of the Great Shoals (Smith's), 24 miles, the descent was only 31 feet (1.3 foot to the mile); from the head of the Great Shoals to the foot, 9 miles, nearly 55 feet (average 6.0 feet to the mile, but on Long Shoal, 13 feet to the mile); and from the foot of the shoals to the State line, 129 miles, only 94½ feet, an average of only 8.8 inches to the mile.

The estimated cost of this improvement, consisting of 13 locks and dams, for steamboat navigation, from the mouth of Laurel River to the Tennessee line, 163 miles, was $1,578,871, but it might be accomplished for $510,548, so as to enable steamboats to run from 3 to 5 months in the year, and coal-boats to descend when there should be water enough for them to pass the minor ripples. From the mouth of Laurel to the Great Falls the improvement was considered impracticable, comparing expense with expected results.

To utilize, then, the Cumberland River as a safe means of transportation, the following estimates have been made:

Canalling around the falls	$368,500
From Laurel River to Tennessee line	1,578,871
Pineville to mouth of Jellico (4 months)	55,000
Total	2,002,371

Leaving the removal of the obstructions for 10 miles below the falls, in which there is an average fall of 8.5 feet to the mile, and for from 12 to 16 miles above the falls, in which there is a great descent in the water-level, not estimated for at all.

When we consider the great slope of this section of 26 miles from the mouth of Jellico to the mouth of Laurel River, and the torrential nature of the Cumberland River, the difficulty of improving it by any ordinary methods of slackwater can be readily seen. For steamboat navigation or for safe flat-boat navigation not less than fourteen additional locks and dams would be required, at a probable cost of not less than $80,000 for each set, or an additional amount of say $1,120,000. It is evident that unless there could be an assured market below the falls for the inexhaustible supply of coal, iron ore, and timber in the four counties above, this would be an excessive price to pay for opening this water line, but the iron and coal having passed the falls comes in direct competition not only with the minerals from Laurel and Pulaski counties, Kentucky, but also with that from the coal and iron deposits of Pennsylvania, Virginia, and the western coal-field of Kentucky, which have no such obstacles to free and cheap navigation to encounter.

Timber at present is and will be for many years the only product for water transportation from the Upper Cumberland to points below the falls, and for its transportation the only work required will be that on the upper river already described, and the removal of the immense sandstone bowlders from the channel below. Logs already pass the falls very freely, but many are lost on the rocks and drift piles below them.

For the rest, the Louisville and Nashville Railroad, Knoxville Branch, and the Kentucky Central Railroad, in conjunction, have decided upon completing the line from Livingston, the present terminus of the former road, to Careyville, Tennessee, via Williamsburg, where the road will cross the Cumberland. The officials of the Cincinnati Southern road also have announced their willingness, I understand, to build a short branch 12 miles in length from Pine-Knot Station to the mouth of Jellico, if the river should be improved above that point. Should either of these roads be built—and it is probable that both of them will soon be—the improvement of the river from Pineville to the railroad crossings, about 110 miles, would go far toward meeting the present needs of this section for transportation facilities, at very reasonable expense, and without encountering the dangerous navigation of the great shoals and falls below.

There are appended hereto tables of analyses of Cumberland coals and iron ores.

I am, sir, very respectfully, your obedient servant,

W. L. MARSHALL,
First Lieutenant of Engineers.

Maj. W. R. KING,
Corps of Engineers, U. S. A.

ANALYSES OF CUMBERLAND VALLEY COALS.

[Taken from Procter's Resources of the North Cumberland Valley, p. 10 *et seq.*]

From samples carefully averaged by the members of the Kentucky Geological Survey, representing the entire thickness of bed. These samples were taken from imperfect openings and may not represent the coals at their best.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.
Moisture	1.70	5.20	2.96	1.50	1.00	1.90	1.26	1.36
Volatile combustible matter	35.70	31.26	35.28	37.94	43.60	37.50	33.96	35.80
Fixed carbon	59.60	60.08	59.40	58.40	47.80	57.90	55.52	59.54
Ash	3.00	3.46	2.36	2.16	7.60	2.70	9.36	3.30
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Coke	62.60	65.54	61.76	60.56	55.60	60.60	64.98	62.84
Sulphur	0.750	0.618	0.736	1.038	0.590	1.519	2.672	0.975
Specific gravity	1.289	1.356	1.277	1.262	1.202	1.276	1.344	1.282

No. 1.—Clover Fork, Harlem County, 54 inches thick.
No. 2.—Skidmore's bank, Martin's Fork.
No. 3.—Higuite branch, Bell County.
No. 4.—Clear Fork of Yellow Creek, Bell County.
No. 5.—Cannel coal, Fork Ridge.
No. 6.—Straight Creek coal.
No. 7.—Fork Ridge, 4 feet vein above the cannel.
No. 8.—Clear Fork, 4 feet thick.

For comparison with the foregoing are given below analyses of the best coals of Ohio, Illinois, and Indiana, taken from volume 1, new series, Kentucky Geological Reports.

States.	Number of specimens analyzed.	Volatile combustible matter.	Fixed carbon in coke.	Per cent. ash.	Per cent. sulphur.
Ohio	7	34.59	55.17	6.43	1.494
Illinois	2	31.95	59.06	5.96	1.924
Indiana	3	35.93	54.24	7.23	1.946
Average	12	34.13	56.12	6.54	1.788

Five celebrated Pennsylvania coals, viz: "Cambria Iron Company's Mine;" "Coal A, Woodcock Mine;" "Kittanning, Coal E;" "Cambria Coal and Coke Company," and the "Coking Coal of Johnstown," as analyzed by the chemist of the State Geological Survey of Pennsylvania, gave respectively of ash, 6.930, 5.750, 4.750, 6.163, 8.83 per cent.; and of sulphur, 2.843, 0.567, 2.728, 2.352, and 2.78 per cent.

IRON ORES.

1. Clinton or fossil ore from Cumberland Gap, &c., analyzed by Dr. Peter and Mr. J. H. Talbut, Kentucky Geological Survey, gives:

Percentage of metallic iron =	54.166	51.750
Percentage of phosphorus =	1.40	1.40
Percentage of sulphur	Trace.	Trace.

2. Analyses of ores from Big Stone Gap No. 1, Clinton or fossil ore No. 2, a brown hematite, by Mr. McCreath:

	No. 1.	No. 2.
Percentage of metalic iron =	52.600	55.556
Percentage of sulphur =	0.018	0.037
Percentage of phosphorus =	0.116	0.051
Insoluble residue =	18.140	7.840

Prof. J. J. Stevenson estimates that iron may be made at Big Stone Gap for $8.25 per ton. Fragments of ore picked up from the surface within this area give, by analysis, the following percentages of iron:

1. Carbonate of iron, Log Mountain, Whitley County, gives 39.20.
2. Carbonate of iron, Cumberland Falls, Whitley County, gives 38.81 to 42.00.
3. Limonite, headwaters of Mud Creek, Whitley County, gives 56.37.
4. Carbonate of iron, Poplar Creek, Whitley County, gives 37.60.
5. Limonite, south part Pine Mountain, Whitley County, gives 44.53.

Some of which is so poor as to require some other ore to mix with it to smelt it successfully, while others only require limestone to flux it.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 58.

NIAGARA AND GRASS RIVERS AND HARBOR AT PORT DAY, NEW YORK.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

A report of the Chief of Enginee rs relative to the examination and survey of the Niagara and Grass rivers and harbor at Port Day, New York.

JANUARY 25, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPRATMENT,
Washington City, January 24, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, dated the 22d instant, and accompanying copies of reports from Maj. Walter McFarland, Corps of Engineers, upon examinations and surveys made in compliance with the provisions of the river and harbor act of June 14, 1880, of Niagara River, at the mouth of Tonawanda Creek, New York; at Port Day, above the Falls of Niagara; and of Grass River, at Massena, Saint Lawrence County, New York.

ALEX. RAMSEY,
Secretary of War.

THE SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 22, 1881.

SIR: To comply with requirements of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Maj. Walter McFarland, Corps of Engineers, of the results of examinations and surveys made under his direction with a view to improvement at the following localities, viz:

1. Niagara River, at the mouth of Tonawanda Creek, New York.

2. At Port Day, above the falls of Niagara, New York.
3. Grass River, at Massena, Saint Lawrence County, New York.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY OF NIAGARA RIVER, AT THE MOUTH OF TONAWANDA CREEK, NEW YORK.

UNITED STATES ENGINEER OFFICE,
Oswego, N. Y., January 17, 1881.

GENERAL: I have the honor to submit herewith my report upon the survey of Niagara River, at the mouth of Tonawanda Creek, ordered by act of Congress approved June 14, 1880, and placed in my charge by letter from your office dated June 17, 1880.

The port of Tonawanda, which lies at the mouth of Tonawanda Creek, on the Niagara River, 11 miles below Buffalo, partly in each of the two collection districts of Buffalo Creek and Suspension Bridge, has, within the last few years, become of great importance as a lumbering port, rating, it is said, next after Chicago, most of the lumber trade of Buffalo having gone to it. Last year it received 350,000,000 feet (board measure) of lumber. This lumber, which is almost exclusively from the forests of Michigan and Wisconsin, is sent away or distributed chiefly through the agency of the Erie Canal and the New York Central and Erie Railways. The arrivals and departures at Tonawanda during the last year were, of lake vessels, 1,800; canal boats, 6,000; employing upwards of 8,000 men.

In front of the mouth of Tonawanda Creek lies Tonawanda Island, between which and the shore is a narrow channel, so obstructed by bars near its middle and at the upper and lower ends of the island that it has become necessary, in order to avoid maneuvering in it, for large vessels seeking the port to pass down the outer channel between Tonawanda and Grand Islands, doubling the lower end of Tonawanda Island, and so passing up the inner channel to Tonawanda Creek. The outer channel through which they have to pass is, however, obstructed in several places by submerged rocks, on which a number of vessels have been lost.

The improvement desired here is that these rocks in the outer channel be removed, and that the bars before referred to be cut away so as to admit of a safer handling of vessels in the inner channel. The map herewith shows the position of these obstructions and the improvements recommended. The estimated cost of these is $15,000.

I send herewith the report of Assistant Engineer F. T. Hampton, who made the survey. The buoying which he recommends is a matter to be determined not by the War Department but by the Light-House Board, to which it might be referred.

Very respectfully, your obedient servant,

WALTER MCFARLAND,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

Tonawanda Harbor

Niagara River. N.Y.

November. 1880

Scale 1 Inch = 600 Ft

0 500 1000 1500 2000

Proposed Buoys +

Village of North Tonawanda

Smith, Fassett & Co's Dock

Lumber Yard

Weston Bros Dock

Main channel

Proposed Dredging

U.S. Breakwater

Lumber Yard

Evans Dock

Proposed Dredg

Tonawanda Ck

Proposed line of Dock

Bennetts Lumber Yard

Tonawanda Island

Niagara Iron Co

Timber Boom

Gratwick's Docks

Above these docks there is not less than 15ft of water in this channel

Bar

Mansion

Proposed Dredging

Bar

Canadian Bank

Miners Capstan

Village

Erie Canal

P.W. Scribner's Dock

Submerged Rock

Submerged Rock

11 to 12 ft

12 to 12 ft

Rock Bar

11 to 12 ft

This point may be considered at present as foot of navigation on Niagara River

Timber Boom

Hensleys Capstan

Spiess Dock

Submerged Rock

Capt Harr Booth

John Nice

Grand Island

John Nice

Ransom

Ferry Landing

Walter McFarland
Major of Engineers

F. T. Hampton.

House Ex. Doc. N° 58. 3rd Sess. 46th Cong.

REPORT OF MR. F. T. HAMPTON, ASSISTANT ENGINEER.

TONAWANDA, N. Y., *November* 18, 1880.

MAJOR: I have the honor to submit a report of my survey of Tonawanda Harbor, made in accordance with your verbal orders to me of October 8 last. * * *

The name Tonawanda is commonly applied to the general settlement about the mouth of Tonawanda Creek and vicinity, but there are, in fact, two distinct incorporated communities, Tonawanda proper, above the creek, situated in Erie County, and North Tonawanda, below the creek, situated in Niagara County, New York. These two settlements have separate municipal governments, and each has a collector of United States customs. This settlement, 11 miles below Buffalo, may be said to be at the foot of navigation on the Upper Niagara River. Its harbor is naturally excellent, and, with the Erie Canal, the facilities for water transportation are very great. Its railroads are the New York Central and Erie branches. These advantages, together with its ample lumber-yard room and cheap dockage, have drawn off a large part of the lumber business from Buffalo, and made Tonawanda second only to Chicago as a lumber port. Outside of its lumber trade it has no commerce of any consequence. Its lumber is received in steam barges and sailing vessels from the forests of Michigan and Wisconsin and reshipped principally by canal to all the Eastern markets.

It is to accommodate this large and increasing lumber business that the citizens call the attention of the government to the needs of their harbor. The maximum draught of vessels entering this harbor on an ordinary low stage of water is 12 feet. Vessels drawing 13 feet frequently enter when the wind is favorable to raising the water.

After my examination of the river, I must conclude that 13 feet is all that can be secured on extreme low-water stage with a reasonable expenditure of money; 14 feet is wanted.

The marked variations on the stages of water here are produced by the winds. During my stay here the range has been from 0.4 of a foot above low-water to 5 feet. This last rise occurred on the night of November 6, during the heavy gale when the docks were submerged and the river backed up into the town.

The soundings on my maps are reduced to low-water *extreme*, or what was represented to me as such. This stage is not reached every year; 1 foot can be added to them for the average stage in the fall of the year.

By the harbor of Tonawanda is to be understood not only the river frontage of the town, extending from the ferry landing to Gratwick's docks, but as including the wide chute between Tonawanda Island and Grand Island. This channel is used by vessels going to the lower docks, and usually by large vessels that want to reach the mouth of Tonawanda Creek. It is difficult for large craft to descend the small chute and *turn round* to enter the creek.

The large map, on a scale of 100 feet to the inch, shows the most important part of the harbor, and where the most work is contemplated; most of the soundings are taken on lines 50 feet apart, the soundings on the line being about 20 feet apart.

The smaller map, on a scale of 300 feet to the inch, is intended to give some idea of the character of the wide chute and of the conjectured position of the submerged rocks, upon which several vessels have sunk; also the location of proposed buoys.

The several obstructions to navigation in Tonawanda Harbor are as follows:

Three rocks or clusters of submerged rocks in the wide chute.

Bar at head of Tonawanda Island.

Bar at foot of Tonawanda Island.

Bar midway small chute.

Bar at mouth of Tonawanda Creek.

I regret I am unable to give any exact information of those sunken rocks. I have availed myself of the best experience to be had here, and yet I have not touched one of these rocks with my sounding-pole. You can readily imagine the difficulty of finding a rock only a few feet square 8 or 10 feet under water in a broad river 2,000 feet wide without any range objects to guide me; for as often as vessels have struck these rocks it has never occurred to any one to carefully notice their position. The most experienced pilot in this vicinity is Capt. Harvey E. Booth. He has navigated Niagara River for thirty years, and has had more responsible charges than any pilot living here. In company with him I have located the probable position of these rocks. He says that in the summer several of these rocks can be easily seen; the water is then clear and smooth, and the rocks can be discovered by the "break" over them. During my examination the surface of the water was constantly ruffled by a breeze, and the water itself was murky, so I could distinguish nothing. I think the only way to find these rocks is by dragging for them. As this method would have been attended with greater expense than was provided for, I did not undertake it.

It is the opinion of some river men that these rocks are moved more or less every year by the ice, and if this be so it will be almost impossible to find them by sounding.

The rock lying abreast of Nice's house is described as particularly in the way; two

vessels have been sunk upon it, and some minor accidents occurred. The vessels struck it broadside while rounding to come into the docks. It is said to be from 4 to 6 feet through, with 8 or 9 feet water upon it and 15 to 16 feet around it.

Two vessels have been sunk upon the rocks abreast foot of Tonawanda Island. These rocks are described as two in number, from 8 to 10 feet square each, with 16 feet of water about them and 8 feet on top of them.

The rock opposite the Iron Company's dock is said to be about 6 feet square on top and 9 feet of water upon it; it has sunk one vessel. From all I can learn from hearsay there are about 50 cubic yards altogether in these rocks.

My examination shows that there are solid rock reefs in navigated parts of this wide chute where there is only 12 to 13 feet of water. As vessels drawing eleven feet frequently pass down this part, it would take but a small rock to become a serious obstruction if dropped upon the reefs by the ice. As there is plenty of good water if vessels can keep in it, I would recommend the buoying of these reefs as the only practicable way of securing safe navigation. I have shown the proposed location of these buoys by a +. I think, however, the importance of this channel is great enough to justify a more accurate and thorough examination than the present appropriation permitted. It ought to be as complete as the survey of the small chute, and if made in July or August ought not to cost over $100.

For the *discovery* and removal of the rocks upon which vessels have been sunk I would allow an estimate of $500. This certainly ought to cover the cost of their removal, if the description given me is any way accurate. There would be eight buoys to be anchored in 12 to 14 feet of water; cost about $15 each=$120.

The entire estimate for the wide chute, as far as my present information permits me to make, is $1,020, including the cost of a more complete survey, which I have recommended to be made.

The improvements at head of Tonawanda Island and mouth of Tonawanda Creek are to facilitate the entrance of vessels into the creek. I should say that the creek, during navigation season, is crowded with canal boats, shipping, and rafts of logs from its mouth to the bridge, ¼ mile below.

The bar at head of island extends about 800 feet up stream and so contracts the entrance to the narrow chute that vessels drawing 12 feet have to keep close to the line of docks. This makes it very awkward for them in rounding to for entering the creek, especially for the large steam barges, which are over 200 feet long. They want to bear to the left as far as possible in descending the stream.

I allow for the excavation of 21,000 cubic yards, according to the lines shown on map. The material is, as far as I can judge, gravel, small bowlders, and blue clay. It can be dredged for 40 cents per yard, perhaps less. Its cost would be about $8,400.

I regard the cutting off of the sharp corner of the upper dock, mouth of creek, an important part of the project. Its advantage is evident, and its cost, exclusive of indemnity to the owner for reduction of his dockage—some 200 linear feet—is not great.

Giving the proposed new dock the lines shown on map, there would be about

360 feet of old docking to be removed	$250
2,000 cubic yards excavation, 30 cents	600
200 linear feet new dock, $6	1,200
	2,050

At mouth of creek dredging to the amount of 2,000 cubic yards, at 30 cents per cubic yard=$600, is necessary. This bar is said to have been formed when the canal which empties into the creek was dredged, the sediment that was stirred up having deposited in the creek. Since I have been here I have seen conditions favorable to the formation of a deposit at this point. The river was carrying considerable sediment, and, with its strong current, would naturally cause whirls and eddies at mouth of creek, and in slips where there was no current. In the spring, however, there is a strong current in the creek; this may hold in check the tendency of the river to form an impassable bar. Opposite Smith & Fassett's dock is a bar which has caused much trouble by vessels grounding on it. It practically diminishes the width of the river at this point 100 feet.

I estimate 3,300 cubic yards dredging here, at 40 cents, $1,320. The material is of the nature of hard pan mixed with some small bowlders. I do not think there is any necessity for dredging bar at foot of Tonawanda Island. A few buoys located as I have shown on the map will answer all purposes. I suggest pile-buoys, five or six in a cluster, driven deep and bound with a chain. If they would stand at this point it would save much trouble in resetting floating buoys every year. My idea is the island would protect them from the heavy ice. I have noticed a good many old piles standing on Grand Island side. The general opinion of harbor men, however, is that they will not stand.

There would be five of these pile buoys $30=$150.

The total estimate for Tonawanda Harbor may be summed up as follows:

For an accurate survey of the wide chute	$400
For rock excavation in wide chute	500
Eight buoys in wide chute	120
Total for wide chute	1,020
21,000 cubic yards excavation at head of Tonawanda Island, at 40 cents	8,400
Cutting off the point at mouth of Tonawanda Creek	2,050
2,000 cubic yards excavation in channel at mouth of Tonawanda Creek, at 30 cents	600
3,300 cubic yards excavation on bar opposite Smith & Fassett's dock, at 40 cents	1,320
Five buoys at foot of the narrow chute	150
	13,540

It may be well to allow $15,000 as the total estimate.

The lumber trade of Tonawanda is assuming large proportions. * * * Its receipts of lumber have steadily advanced, as here shown, for a series of eight years, beginning with 1873. The figures represent the number of millions feet of lumber received each year: 105, 148, 155, 208, 221, 226, 300, and in 1880 381,000,000 feet have been received, besides a large amount of shingles, laths, and staves.

Since April 1 of the present year there have been 1,800 arrivals and departures of vessels and 6,000 of canal-boats. These vessels and canal-boats employ some 8,000 sailors, roustabouts, and drivers. There are employed on the docks, in lumber-yards, and mills of Tonawanda 1,050 men.

As but a small portion of this lumber comes from Canada, the customs receipts are comparatively small; last year they were about $25,000. This year they are about $30,000 to date.

A considerable amount of bonded lumber passes through here to New York. Such lumber has paid, this year, a duty in New York of $20,000.

No one could have remained in this place as long as I have without being impressed by the magnitude of its lumber interests, and I must admit that the claims of the harbor upon the attention of the government are well founded.

It is my duty to make acknowledgment of courtesies received from the Tonawanda Lumbermen's Association, and particularly from Mr. P. W. Scribner, who gave me the use of his office while making my maps, and in other ways assisted me. * * *

I am, very respectfully, your obedient servant,

F. T. HAMPTON,
Assistant.

Maj. WALTER MCFARLAND,
Corps of Engineers, U. S. A.

EXAMINATION OF THE HARBOR AT PORT DAY, ABOVE THE FALLS OF NIAGARA, NEW YORK.

UNITED STATES ENGINEER OFFICE,
Oswego, N. Y., January 15, 1881.

GENERAL: I have the honor to report as follows upon the examination of the harbor at Port Day, Niagara River, New York, ordered by act of Congress approved June 14, 1880, and placed under my charge by letter from your office dated June 17, 1880:

It was found, after a good deal of inquiry, that Port Day is the name given to the head of what is known at Niagara Falls as the Day Hydraulic Canal, which furnishes most of the factories at that village with water power; and that the object of the examination was to ascertain whether safe water communication could not be secured for the products of these factories to Tonawanda, seventeen miles above, and so to the Erie Canal, thus relieving them of a large part of the freight charges which they are now compelled to pay to the railroads.

The head of this canal lies about 2,000 feet above the head of Goat Island, between the rapids leading to the American Falls and the

Schlosser Rapids just above. There is a channel more than 10 feet deep leading to it between these rapids, from the Canadian side, at the mouth of Chippewa Creek, and there is a gap in the Schlosser Rapids, about 1,500 feet from the American side, through which also this Canadian channel may be entered, but neither of these channels is ever made use of except through a spirit of adventure, as the slightest accident or mismanagement must result in the destruction of the vessel in the rapids below, or in her going over the falls, and no insurance can be had upon them therefore. A good and perfectly secure channel through which canal-boats drawing 5 feet water can pass to Port Day may be formed, however, by making a cut close to the American shore through the rocky ledge forming the basis of the Schlosser Rapids.

Mr. Hampton, the assistant engineer who made this examination, estimates the amount of rock to be removed in order to accomplish this purpose, at about 4,000 cubic yards at $2.50 per cubic yard. A survey only can determine the amount actually to be removed, but it probably will not differ materially from this. On account of the uncertainty regarding the nature of the bottom, however, and the difficulty of working in rapid water, I think the rate per cubic yard should be placed at $4 instead of $2.50, which would make the estimated cost of this work as follows:

Excavating 4,000 cubic yards of rock, at $4 per cubic yard	$16,000
Contingencies	1,000
Total	17,000

The various channels referred to are indicated on the map sent herewith.

A copy of Mr. Hampton's report is appended, which contains a very full account of the various industries which would be helped by an improvement of the kind proposed.

Very respectfully, your obedient servant,

WALTER McFARLAND,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. F. T. HAMPTON, ASSISTANT ENGINEER.

NIAGARA FALLS, N. Y., *November* 30, 1880.

MAJOR: I would respectfully submit a report of a hasty examination which I have made of the rock bar above Port Day. It is about all I can effect here this winter.

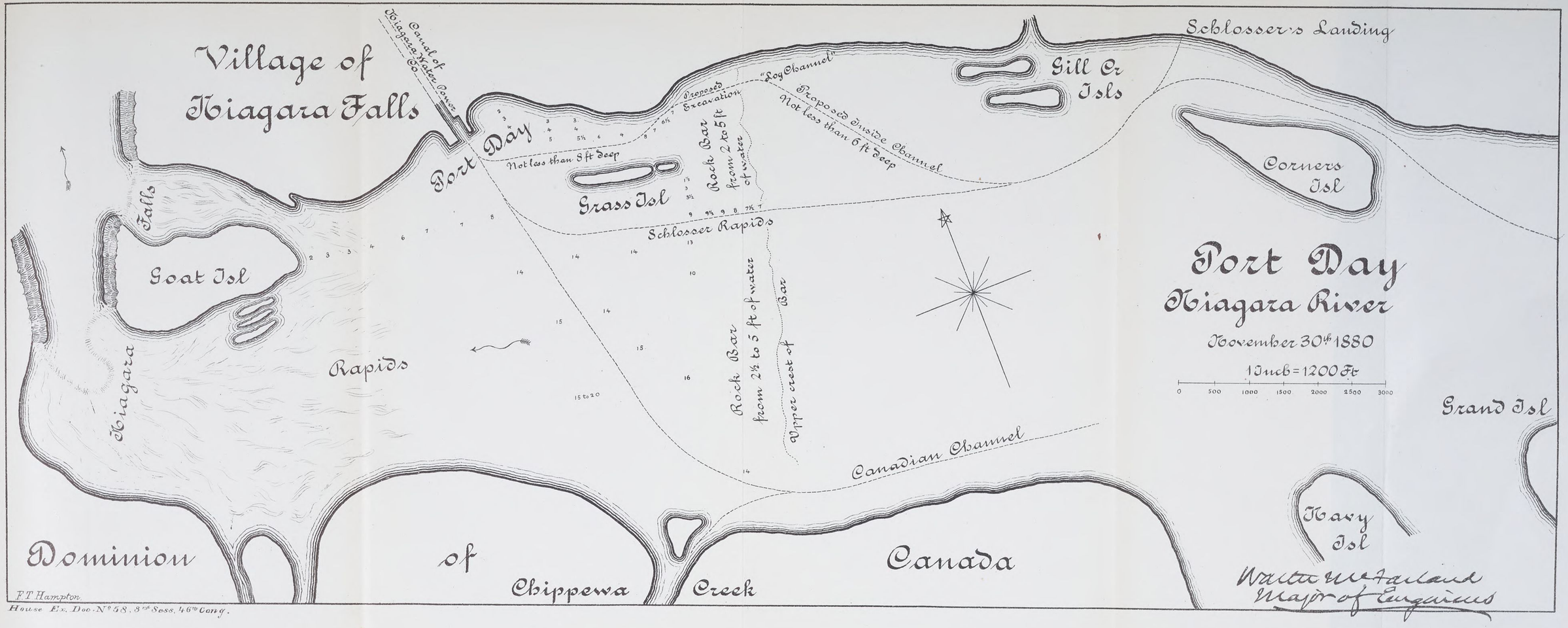
I have attempted no instrumental measurements, but the sketch will give a very correct general idea of the situation.

The chief design of the contemplated improvement of the channel at this point is to bring the manufacturing interests of Niagara Falls in water communication, by canal-boats, with Tonawanda, 17 miles above, and Buffalo, making, in fact, Port Day a feeder of the Erie Canal. At present there is no commerce by river from this point; the dangers to navigation are too great.

The Canadian channel from Chippewa to Port Day is extremely dangerous on account of the strong current and proximity of the rapids below. I may say it is never navigated now by anything larger than a skiff.

Sometimes a steam pleasure yacht will run, more for the sake of adventure than business, but no prudent river-man will venture in it with a valuable vessel and cargo. A depth of 10 feet may be found anywhere in this channel.

The Schlosser Rapids channel has a minimum depth of 7 feet on the bar, and a boat could safely load to 6 feet for it, but it is hardly less dangerous than the first-named


Village of Niagara Falls
Canal of Niagara Water Power Co
Port Day
Not less than 8 ft deep
Proposed Excavation
"Log Channel"
Proposed Inside Channel
Not less than 6 ft deep
Rock Bar from 2 to 5 ft of water
Grass Isl
Gill Cr Isls
Schlosser's Landing
Corners Isl
Schlosser Rapids
Goat Isl
Falls
Niagara
Rapids
Rock Bar from 2½ to 5 ft of water
Upper crest of Bar
Canadian Channel
Grand Isl
Navy Isl
Port Day
Niagara River
November 30th 1880
1 Inch = 1200 Ft
0 500 1000 1500 2000 2500 3000
Dominion of Canada
Chippewa Creek
F T Hampton
House Ex. Doc. No 58, 3rd Sess. 46th Cong.
Walter McFarland
Mayor of Engineers

channel. The current in the gap must be 5 miles per hour; I could barely stem it with two strong oarsmen in a light skiff; and during a moderate wind the water becomes so turbulent that a skiff cannot live in it.

Some citizens here advocate the improvement of this channel on account of its less cost, but, from what I have seen, I doubt if it can be so improved as to inspire pilots with confidence in it.

There is imminent danger of a vessel being lost if the slightest mishap occurs in her handling. The fouling of a tow-line, an engine getting on its center, might be fatal. If the vessel was not carried over the Falls, it would be wrecked on the rocks below. All tug-men justly dread it and will not venture in it unless the shipper or proprietor of a tow assumos all risks both to tug and tow; nor can any insurance be had on the vessels.

I do not consider, therefore, this channel, or any other lying outside or south of Grass Island, as deserving much attention in the consideration of a scheme for improving navigation at Port Day.

The line I have marked "Proposed inside channel" explains itself. It has not as much water as the other two channels, but it is perfectly safe.

A depth of 6 feet can be obtained on the bar by excavating 4,000 cubic yards, allowing a channel width of 75 feet and length of excavation about 600 feet.

The rock is described to me as lying in ledges and easily broken up. I think there is considerable loose rock upon it. The formation, I suppose, is the same as that through which the Water Power Company's canal is cut. If I mistake not, it is known as coraline limestone. It could be removed, I think, for $2.50 or $3 per cubic yard, blasting and dredging. I have been shown an estimate made some years ago by an engineer, Charles Whitney, for the excavation of a channel through this bar.

His proposed excavation was 650 feet long, 150 feet wide, and depth of cut 7 feet—about 23,000 cubic yards—which he estimated at $75,000, allowing for a coffer dam.

He must have calculated on a 10-foot channel, overlooking the fact that this depth is not found above the bar.

If this inside channel were opened, boats drawing 5 feet can descend as safely to Port Day as to Tonawanda.

In case of any accident to the steam-power, they could be brought to the bank easily by hand. Throughout the channel they would be under perfect control.

After passing over the bar they are in a natural harbor. Canal-boats would have no difficulty in passing through this width—75 feet—but the cut should be buoyed. These boats usually draw from 6 to 7 feet. They would have to load to 5 feet for Port Day.

If the manufacturers of this town can get canal-boats from Buffalo and Tonawanda drawing 5 feet to come alongside of their mills located on the water-power canal, it will give them facilities for water transportation sufficient for their demands for many years to come. With the inside channel opened, there is no reason why the rates of towage and insurance should not be as low as on the upper part of the Niagara River. For the towage of these canal boats a stern-wheel tug-boat, such as used on Western rivers, would be better adapted than an ordinary propeller tug. The Western stern-wheel would draw about 4 feet and would tow three loaded canal-boats up stream. An ordinary tug drawing 5 feet can handle only one boat. There is never sufficient sea on this stretch of Niagara River to prevent the use of a stern-wheel boat. To make the inside channel navigable for such tugs as work in Tonawanda and Buffalo Harbors, the cost would be very great.

An accurate survey of the bar above Grass Island might show a better way of overcoming it, but the passage I have shown, which has long been known as the "Log Channel," is said to have the best water.

My present recommendation is that if any improvements are undertaken here, the money should be spent on the inside channel. The exact location and cost of this channel can be determined only by an accurate survey.

Briefly stated, an excavation 600 feet by 75 feet, with 6 feet depth of water, containing 4,000 cubic yards, at a cost of $10,000, will secure a safe channel for 5-feet draught boats; and it will not be possible to get more than this without the expenditure of a much larger sum of money than the case seems to justify at present.

I herewith submit some facts in regard to the business interests of Niagara Falls, which would be especially benefited by this contemplated work.

The business of Niagara Falls is due to its manufactures and its position as a resort for tourists.

The first-named interest principally deserves attention in connection with the contemplated project of improving the river so as to give safe access to the mouth of the hydraulic canal, known as Port Day.

Wood-pulp manufacture has become an important industry at Niagara Falls, the abundance and purity of the water being peculiarly favorable to this manufacture. There are three mills in operation, with an aggregate capital of $200,000, employing about one hundred hands, and producing thirty tons of pulp every twenty-four hours,

worth $1,500. To produce this amount of pulp about forty cords of poplar wood are required.

Paper manufacture is represented by one mill. It makes only printing paper. The capital invested must be fully $300,000, including canal and water privileges. It produces every twenty-four hours five tons of paper, worth $140 per ton = $700. It employs one hundred hands, directly and indirectly. Ten tons of pulp material, one ton of chemicals, and six tons of coal are consumed daily.

There are four flour-mills here, with a capital of $900,000 invested, including the stock of grain which they have to keep on hand. They employ two hundred and fifty hands, including cooper-shops. They consume daily 6,000 bushels of wheat and produce 1,500 barrels of flour, worth about $9,000. One of these mills is said to be the best in the State of New York; it alone turning out from 800 to 1,000 barrels per day, and is about to enlarge its capacity.

There is one brewery with a capital of $150,000, employing fifty hands, including its cooper-shop. There are also several small machine-shops and planing-mills, representing a capital of $20,000, and employing from twenty-five to thirty hands.

Besides these mills in actual operation, there are building two new manufacturing enterprises: A wood-pulp mill, capital $100,000, with a capacity to turn out $200,000 worth of pulp every year; a plated-ware factory, building by the Oneida Community, capital $100,000, will employ about one hundred operatives, and produce goods at about $150,000 value annually.

From these figures it appears there are $2,500,000 invested in actual productive enterprises here, whose products annually are worth about $2,700,000; that in the next year the invested capital will be increased by $200,000, and the value of products by $350,000.

These figures may seem extravagantly large, yet I think I am within the bounds of truth. My information was obtained from various individuals and from my own observation at the mills, and allowing the market value of the products.

So far as I am able to form an opinion, I think the manufacturing interests of Niagara Falls are on the increase.

In the fabrication of such an article as paper, where *clean* water is required in chemical processes as well as abundance of it for motive power, this site offers great advantages, which in time must be utilized.

At present a very small proportion of the power at Niagara Falls is utilized.

The hydraulic canal, which furnishes the greater part of the power, has a clear water section of 35 feet by 10 feet, and, when the mills are running, the current is about $1\frac{1}{2}$ miles per hour. I believe it is the intention to widen this canal to its originally contemplated width of 70 feet.

One item of importance in this connection is the railroad charges on such articles as these manufactures handle.

About 312,000 pounds of manufactured goods are daily shipped from the Falls, the greater part to New York City, paying a railroad tariff of about 20 cents per 100 pounds. Wood-pulp and paper being bulky articles, feel this rate much more than heavier goods, like flour.

I was told by the paper manufacturers that if they had connection by water with the Erie Canal at Tonawanda they could ship their paper to New York at half the above rate.

The scheme of an international park seems to be still alive, and the citizens of Niagara claim it furnishes another argument for government aid to their river. If this scheme is carried out a driveway or boulevard will be constructed in front of the river at Port Day, and add to the attractions of the Falls.

The people are sanguine that if they had a safe channel to their port, a large number of travelers would leave the rail at Buffalo and take a boat to Niagara Falls, in order to enjoy the river scenery, which has great attractions in this short stretch.

But I cannot resist the conclusion that the claims in future of Port Day—Niagara Falls—on the patronage of the national government will be based more on the magnitude of its manufacturing interests than on the magnificence of its natural wonders.

The population of Niagara Falls Village and Suspension Bridge Village is about 5,000; they may be considered one settlement. The Canadian villages opposite have as many more, so there are about 10,000 people living around Niagara Falls.

Very respectfully, your obedient servant,

F. T. HAMPTON,
Assistant.

Maj. WALTER MCFARLAND,
Corps of Engineers, U. S. A.

SURVEY OF GRASS RIVER AT MASSENA, SAINT LAWRENCE COUNTY, NEW YORK.

UNITED STATES ENGINEER OFFICE,
Oswego, N. Y., January 12, 1881.

GENERAL: I have the honor to report as follows upon the survey of Grass River, ordered by act of Congress approved June 14, 1880, and assigned to my charge by letter from your office dated June 17, 1880:

By communication with the member of Congress representing the Congressional district in which Grass River is situated, it was learned that the object of the survey was to ascertain the cost of improving this river so that small steamers might ascend it during the entire navigable season, from May 1 to December 1, as far as Haskell's wharf, the landing for Massena Village, about 7½ miles by water from the Saint Lawrence River, into which Grass River empties.

At present, small steamers drawing 3 feet of water can ascend to this point during only two and a half months of each season of navigation. During the remainder of the season they have to stop at Massena Centre, 4 miles below Massena Village, and then freight and passengers are transferred the rest of the way by wagon.

It is desired that the river be so improved that vessels of this draught, viz, 3 feet, may ascend to Massena Village throughout the entire season of navigation, lasting about seven months; which would permit also the ascent of vessels drawing 4 or 5 feet during the two and a half months in which high-water usually prevails.

The survey, a map of which accompanies this report, shows that the cost of forming a 5-foot channel, as was desired, would involve too great an outlay, as so much of the river is but 4 feet deep at low-water. The estimate is therefore made for the formation of a channel but 4 feet deep at low-water.

The most serious obstruction to be overcome is at a point known as the Rapids, just above Massena Centre, on which there is a depth of less than 2 feet at the low stage of water. Here, to give a channel 40 feet wide and of the required depth, about 2,000 cubic yards of very hard, tough material must be removed, the cost of which the assistant engineer who made the survey, and whose report is submitted herewith, rates at $2 per cubic yard. I think, however, in view of the uncertain character of the substratum, which may require blasting, that this rate must be doubled, and I therefore place the probable cost of improving this channel as follows:

Excavation at the Rapids:	
2,000 cubic yards, at $4 per yard	$8,000
Excavation at Haskell's wharf:	
1,500 cubic yards, at $1 per yard	1,500
Excavation at other points:	
3,000 cubic yards, at 50 cents per yard	1,500
Contingencies, &c	1,000
Total	12,000

Mr. Hampton's report contains the only information concerning the amount of business likely to be benefited by the improvement that has been procured.

Very respectfully, your obedient servant,

WALTER McFARLAND,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. F. T. HAMPTON, ASSISTANT ENGINEER.

OGDENSBURGH, N. Y., *September* 23, 1880.

MAJOR: I have the honor to submit a report and map of my survey of Grass River, as you directed me to make by your letter of August 26. The map I send by express.

As I mentioned in my letter of August 21, the improvement of only that portion of the river lying below Massena Landing on Haskell's wharf is contemplated. The object of the survey was to ascertain the cost of so improving the river as to enable a steamboat drawing 3 feet of water to ascend to Haskell's wharf during the entire season of navigation, which extends from May 1 to about December 1, while a boat drawing from 4 to 5 feet could reach the same point 2 to 3 months in the navigable season.

At present, a 3-feet-draught boat can ascend this distance only about 2½ months; the remainder of the season it must land at Massena Centre Landing, a small village 4 miles below the town of Massena, over which distance transportation is by wagon.

The survey consisted in running a transit line down the bank of the river, and taking soundings at regular intervals of space at right angles to the line.

No levels were taken. The river is for all practical purposes level from Haskell's wharf to its mouth. There may be a fall of 1½ to 2 feet in the entire distance, 7½ miles, but there is little current to indicate it.

The country through which Grass River flows is of sandstone formation, and the surface is gently undulating. The river banks where the hills border immediately on the river are, with few exceptions, easy slopes. Meadow and slope alternate on each side, and rich verdure reaches to the water's edge. The low, level bottom land is locally known as Indian Meadows.

They are from 1 to 3 feet above low-water, and produce abundant crops of wild grass. The shore lines are fringed with aquatic plants, which are so dense in most places that a skiff cannot be pushed through the grass, though there may be several feet of water.

I saw no washed or caved bank. In passing through the meadows we sometimes would stumble into holes or ruts, and in places they were so numerous as to make walking over them very tiresome. I was told this irregularity in the surface of the ground was caused by the ice forming on the meadows when overflowed, and the river rising afterwards the ice lifts the sod and bears it off.

The soil of the country is very sandy and underlaid by clay, and wherever the formation of the hills is exposed, gravel and small bowlders mixed with clay are seen. The permanency of the river banks is due to the heavy growth of grass, which thoroughly protects the earth from being washed by either rain or the river.

As the stage of water in this stretch of Grass River is at all times affected by that of the Saint Lawrence River, it is subject sometimes in winter to extraordinary rises, reaching at Haskell's wharf 25 or 30 feet above the low stage. These rises are due to the damming of the Saint Lawrence near Saint Regis by anchor ice. On this occurrence the Saint Lawrence has been known to rise 15 feet in as many minutes, and the backwater has been seen to pour over the dam at Haskell's mill *up stream* for a short time. On account of these excessive and sudden backwater rises it is impracticable to maintain bridges over Grass River below Haskell's mill. Excepting these sudden rises in winter from backwater the normal fluctuation of the river is from 4 to 5 feet.

At Massena, Grass River passes over a formation resembling blue limestone. The upper dam is built upon it. This rock lies in regular horizontal strata, each about 1 foot thick. It also appears at the lower dam. In passing over this formation the river falls about 23 feet in 1 mile. Below Haskell's wharf I saw no solid ledges of rock.

The general character of the bed of Grass River is mud, sand, and gravel, here and there interspersed with bowlders; the bowlders are numerous at Haskell's wharf and at the obstructions at Massena Centre.

This obstruction lies half way between Haskell's wharf and mouth of river. It is locally known as the "Rapids." At the time of my survey there was nothing about it to deserve the name, though I was told that in the spring of the year there is considerable current here. The difficulty is a lack of water; the least depth at time of my survey was 2¼ feet, and there cannot be at this date over 1¾ feet on its shoalest part. It is the most serious obstruction on the river. At this point I found a singular formation; it may be described as a conglomerate, consisting of gravel and small bowlders, imbedded in the hardest blue clay. This material cannot be penetrated by a pick. It was only by erecting a platform, upon which the men stood and a drill with sledges, that the crust could be broken. It resembles concrete very much. This crust is from 8 to 14 inches thick, underlaid by a substratum of sand, gravel, and bowlders, through which a drill could be driven a couple of feet in a few minutes. I suppose this hard crust could be classified as hard-pan, but it is about as difficult to remove as the same amount of sandstone. It is not only hard but tough, and blasting may have to be done before it can be broken up. After this crust is broken, a strong dredge will, I

think, have no great trouble to excavate to the necessary depth, unless large bowlders are encountered, when blasting will have to be resorted to.

Some work was done here last year by private enterprise; about 30 cubic yards of bowlders were pried out and rolled to one side, some of these bowlders containing ½ cubic yard.

This shoal is over 800 feet long, but over half the work would lie within 200 feet, and from the tests I made I should say the hard-pan crust would be confined within this limit.

ESTIMATE OF WORK REQUIRED TO GIVE A 4-FOOT CHANNEL.

Although a 5-foot channel is desired by the people interested in this proposed improvement, an examination of the map will show the excessive cost of such a work.

During my survey, and particularly while I was taking soundings, the river was stationary, and it was represented to me as at its lowest stage. But as the Saint Lawrence has been slowly declining for the past 10 days, Grass River must be several inches lower than at time of the survey, and I have, therefore, in my estimation, taken 6 inches off my soundings, and allowed for only a 4-foot channel.

In my estimate of work at the rapids I have allowed for a channel only 40 feet in width; there being no current of consequence, and as the river is narrow and protected from winds by the surrounding hills, a small boat can safely make this passage. Such is the opinion of men now navigating the river.

Upon this basis there would be about 2,000 cubic yards of excavation at the rapids, consisting of hard-pan, gravel, and bowlders, which I estimate as worth $2 per yard, including its removal to some dumping point below, about ½ mile, $4,000.

There will be about 1,500 cubic yards of bowlders, gravel, and mud excavation at Haskell's wharf, and extending 500 feet down stream, which may be estimated at $1 per cubic yard, $1,500.

There will be also about 3,000 cubic yards of sand, gravel, and mud excavation at several other points, estimated at 50 cents, $1,500.

The entire cost of securing a 4-foot channel from Haskell's wharf to mouth of river would range from $7,000 to $10,000.

The interruption to the navigation of Grass River by the obstruction at the rapids is most seriously felt, and if the improvement was limited to its removal, at a cost of $4,000 to $5,000, it might no doubt stimulate private enterprise to overcome the other difficulties.

If the estimate should provide for the extension of the channel from Haskell's wharf to a point 300 feet above, so as to secure a better approach to a landing, as is desired by the citizens of Massena, 1,200 or 1,500 cubic yards of bowlders would have to be removed. I have not therefore included it.

An examination of the map will show the relatively small proportion of the shoal water, such as would obstruct the passage of a 3-feet-draught boat (such as now run), and the navigable water. As I have already remarked, the uniformity in depth and width, absence of current, stability of channel, and other features, give this stream more the character of a large canal than of a river, and make it admirably adapted to navigation by small steamers.

As to the commercial interest to be benefited by the proposed work I think there is no question. Massena is the center of a wealthy country, and as a summer resort it has no little celebrity.

Considerable business is carried on with Cornwall, Canada, by way of Grass River. As the Ogdensburg and Lake Champlain Railroad (American) is 15 miles distant, a good deal of live stock and produce are shipped East by Grand Trunk Railroad (Canadian).

The improvement of the river would largely increase this business, besides enabling boats from Ogdensburg to ascend to Massena some 3 months in navigable season, drawing 4 to 5 feet of water.

Taking in consideration the small cost of the work, its durability, and the demand for it, I believe the improvement advisable.

Very respectfully, your obedient servant,

F. T. HAMPTON,
Assistant.

Maj. WALTER MCFARLAND,
Corps of Engineers, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 59.

HUMBOLDT BAY.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Report upon improvement of Humboldt Bay.

JANUARY 29, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 27, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers, dated the 26th instant, and accompanying copy of report from Lieut. Col. G. H. Mendell, Corps of Engineers, upon a survey, with the view to the improvement of the channels inside the bar of Humboldt Bay, California, made in compliance with the provisions of the river and harbor act of June 14, 1880.

H. T. CROSBY,
Chief Clerk, for the Secretary of War in his absence.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 26, 1881.

SIR: I have the honor to submit herewith a copy of a report to this office, from Lieut. Col. G. H. Mendell, Corps of Engineers, of the results of a survey made in compliance with provisions of the river and harbor act of June 14, 1880, with the view to the improvement of the channels inside the bar of Humboldt Bay, California.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY WITH A VIEW TO IMPROVEMENT OF THE CHANNELS INSIDE THE BAR OF HUMBOLDT BAY, CALIFORNIA.

SAN FRANCISCO, CAL.,
January 13, 1881.

GENERAL: I have the honor to submit the following report upon the facts developed by the survey of portions of Humboldt Bay, California, as required by the river and harbor act approved June 14, 1880.

Humboldt Bay is the most important port north of San Francisco, on the coast of California. It is also the most important port between San Francisco and the Columbia River. The tonnage of this port in the year 1878, as compiled from the records kept at the Merchant's Exchange, in this city, counting arrivals and departures at this port, was 134,371. This is made up of 306 vessels departing from this port, and 287 vessels arriving at this port. The difference in number of vessels arriving and departing is probably that due to exports from Humboldt to other ports than San Francisco. The difference in number is 19 vessels, and in tonnage is 5,365. The principal export from Humboldt is lumber, although there are considerable exports of wool and dairy and agricultural productions.

The exports for 1877, as compiled by a citizen of Eureka, and published, are, of other products than lumber, as follows:

Wool	$368,053 00
Oats	85,356 26
Butter	34,504 50
Miscellaneous, about	100,000 00
Total	587,913 76

There are a number of lumber mills in the neighborhood of the bay having a daily capacity claimed to be 438,000 feet. This industry has its times of prosperity and its times of dullness, as have other industries, but in a good year the export is said to reach 60,000,000. In 1879 it was estimated at 48,000, and in 1880 at 42,000,000.

The supply of lumber, which is chiefly redwood, is sufficient for all probable demands upon it for many years to come.

Eureka is the principal place of business on Humboldt Bay. This is a town of several thousand inhabitants. It is also a port of entry in the customs district of San Francisco.

There is, however, little or no foreign trade in the way of imports. The average tonnage of the vessels employed in this trade is about 250 tons. Two steamers are engaged on the route from this port. A steamer leaves each end of the route every five days.

Humboldt Bay is in latitude 40° 46′, and is 230 miles north of this port, being a little north of Cape Mendocino. The bay is about 14 miles in length from north to south. It is separated from the ocean by a narrow strip of sand beach, through which, by an entrance at present about a half mile in width, it maintains communication with the outer world. This communication is over a bar which is very variable both in position and in depth of water. Once inside the bay, there is a good channel to the north, which, before we reach Eureka, is subdivided into three, separated by mud flats or low islands. There is also a channel, of less width and depth, from the entrance for several miles to the southward. These channels are, in the parts most distant from the entrance, bounded by flats, which are bare at low-tide and covered at high-water.

The channel inside the entrance, on the way to Eureka, changes in its

lower part, and, for a short distance, has much less depth than at other points. This part of the channel may, at some time in the future, require a construction planned to concentrate the tidal currents and give a better depth. With the present depth on the bar, the present condition of this part of the channel corresponds very well. It was therefore not thought necessary to take this part of the channel into consideration at present.

The total area of the bay at high-water is about 24 square miles, of which the northern part contains about 17¼ and the southern part about 6¾ square miles, these two parts being separated by the entrance from the sea. The greater part of the area is bare at low-tide.

Eureka is on the northern part of the bay, and on its eastern side, about four miles from the entrance, on the smallest of three channels into which the main channel separates. This channel is 450 feet, between 6-foot contours, in width, with a general depth at low-water of 8 or 9 feet. It has undergone some degradation, as shown by a comparison of a survey made during the present year, under the direction of this office, with the last survey made by the Coast Survey in 1871. Assuming the survey of 1871 to have the same standard of low-water as the survey of 1880, the deposits in front of Eureka, along a distance of a mile, amount to 200,000 cubic yards.

As the depths of 1871 probably need a minus correction to make them correspond to the survey of 1880, this estimate may be considered too large. This impairment of the channel is apparent rather in shoaling on the sides and contraction of effective width than in any great difference in the ruling depth. It is probably due to deposits from natural causes in the flats which it drains. As these flats rise by slow growth, an equal portion of the tidal storage is lost, so that the channel, having less water to carry in the daily ebb and flow of the tide, accommodates its dimensions to the lessened duty required of it. According to this view, if the existing channel were enlarged without at the same time providing for a greater supply of water, it would again, sooner or later, return to its existing condition and dimensions. Moreover, the depth shown by the earliest surveys in the channel in front of the town of Eureka is only about 9 feet. It would be a great convenience to have the depth increased. Indeed, so far as depth is concerned, it would have been better to have located the town on the main channel below.

The best practicable means to maintain a larger channel in front of the town seems to be to make a cut through a shoal separating the Eureka Channel from the next channel to the westward. A cut about 200 feet wide to a depth of 8 feet at low-water would afford a material increase to the natural flow of the Eureka Channel, and would probably maintain a channel of all requisite capacity. This cut would itself gradually become impaired in width or depth from natural causes, and in time would require some dredging. This, however, would lie in the future, and would not be an item of yearly expense.

In addition to developing these conclusions the survey made by Assistant H. D. Gates in September and October, 1880, included an area of shoal water, interfering to some extent with the navigation of the channel in the northern portion of the bay used by vessels taking lumber away from the Mad River district, which affords one of the best supplies of lumber in the neighborhood of the bay.

There is here a piece of channel of about 1,700 feet in length, where the depth at low-water is only 6 feet. This point is several miles north

SURVEY WITH A VIEW TO IMPROVEMENT OF THE CHANNELS INSIDE THE BAR OF HUMBOLDT BAY, CALIFORNIA.

SAN FRANCISCO, CAL.,
January 13, 1881.

GENERAL: I have the honor to submit the following report upon the facts developed by the survey of portions of Humboldt Bay, California, as required by the river and harbor act approved June 14, 1880.

Humboldt Bay is the most important port north of San Francisco, on the coast of California. It is also the most important port between San Francisco and the Columbia River. The tonnage of this port in the year 1878, as compiled from the records kept at the Merchant's Exchange, in this city, counting arrivals and departures at this port, was 134,371. This is made up of 306 vessels departing from this port, and 287 vessels arriving at this port. The difference in number of vessels arriving and departing is probably that due to exports from Humboldt to other ports than San Francisco. The difference in number is 19 vessels, and in tonnage is 5,365. The principal export from Humboldt is lumber, although there are considerable exports of wool and dairy and agricultural productions.

The exports for 1877, as compiled by a citizen of Eureka, and published, are, of other products than lumber, as follows:

Wool	$368,053 00
Oats	85,356 26
Butter	34,504 50
Miscellaneous, about	100,000 00
Total	587,913 76

There are a number of lumber mills in the neighborhood of the bay having a daily capacity claimed to be 438,000 feet. This industry has its times of prosperity and its times of dullness, as have other industries, but in a good year the export is said to reach 60,000,000. In 1879 it was estimated at 48,000, and in 1880 at 42,000,000.

The supply of lumber, which is chiefly redwood, is sufficient for all probable demands upon it for many years to come.

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There is, however, little or no foreign trade in the way of imports. The average tonnage of the vessels employed in this trade is about 250 tons. Two steamers are engaged on the route from this port. A steamer leaves each end of the route every five days.

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lower part, and, for a short distance, has much less depth than at other points. This part of the channel may, at some time in the future, require a construction planned to concentrate the tidal currents and give a better depth. With the present depth on the bar, the present condition of this part of the channel corresponds very well. It was therefore not thought necessary to take this part of the channel into consideration at present.

The total area of the bay at high-water is about 24 square miles, of which the northern part contains about $17\frac{1}{4}$ and the southern part about $6\frac{3}{4}$ square miles, these two parts being separated by the entrance from the sea. The greater part of the area is bare at low-tide.

Eureka is on the northern part of the bay, and on its eastern side, about four miles from the entrance, on the smallest of three channels into which the main channel separates. This channel is 450 feet, between 6-foot contours, in width, with a general depth at low-water of 8 or 9 feet. It has undergone some degradation, as shown by a comparison of a survey made during the present year, under the direction of this office, with the last survey made by the Coast Survey in 1871. Assuming the survey of 1871 to have the same standard of low-water as the survey of 1880, the deposits in front of Eureka, along a distance of a mile, amount to 200,000 cubic yards.

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There is here a piece of channel of about 1,700 feet in length, where the depth at low-water is only 6 feet. This point is several miles north

of the town of Eureka. If a depth of 8 feet existed here, it would be the same as is found above and below.

Reference has been made to the character of the entrance of Humboldt Bay. The depth on the bar and the alignment of the channel are very variable. The following description is condensed from the official Coast Pilot:

Early in 1851 it bore west, and was about one-half mile from the north spit, with a depth of 3½ fathoms. In the fall of 1852 the bar was reported to have moved northward its entire width, making the ranges previously established useless. In the winter of 1853–'54 the bar changed much and suddenly. In the spring of 1854 it was more than its previous width to the southward of its position in 1851; the depth of water had decreased until in June of that year the bar was more than one-half mile in extent with only 16 feet at high-tide. In 1857 less than 13 feet at high-tide could be found upon it, and its extent was very much increased. Eventually a deep and narrow channel was cut through. In April, 1869, the bar had sufficient water for the largest lumber-laden vessels, but within the previous two months had moved 1½ miles to the northward of its winter position, and at the same time the north point of the entrance had formed nearly one-half mile to the southward.

The Coast Survey made a survey in 1858, finding a depth of 3¾ fathoms. In April, 1859, the following statement was reported by an assistant in the surveys of 1851 and 1854:

> The bar is now a mile south of where it was in 1854 and three-fourths of a mile north of where it was last winter, and has 5 fathoms on it. All the north point of the entrance is washed away.

Another survey was made by the Coast Survey in 1871.

Some considerable changes have taken place from time to time in the sand spits which form the heads of the entrance to this harbor. As there seems to be some reason to suppose that the condition of the channel over the bar is connected with these changes, it was thought proper to measure the distance between the spits for the purpose of reference in the future.

We have a record of the relative positions of these spits from the maps of the Coast Survey. It appears that the width of the entrance has been as follows at the times of different surveys:

	Feet.
In 1858	3,050
In 1871	3,300
In 1880	2,740

The distance of the southern end of the north spit from the lighthouse, which is on the north side, has varied in this way:

	Feet.
In 1858 this distance was	3,330
In 1871 this distance was	4,400
In 1880 this distance was	5,750

Showing that 2,420 feet have been added to the length of the north spit since 1858.

In 1858 the north end of the south spit was 1,400 feet farther north than at present; and in 1871, 300 feet north of its present position.

The distance between these spits is now 2,740 feet, the shortest of which we have record. The bar is now in a very good condition, carrying 19 or 20 feet at high-water. This coincidence may be a very important indication.

It would be unsafe to say that a narrow entrance always makes a good bar. The bar is made and determined by the sea. Its storm-waves,

during their prevalence, probably move and distribute the sands which form the bar with little or no interference from other forces. When, however, the season of storms is past, the more quiet and persistent influence of currents becomes a determining force. If they are concentrated and well directed, they are sufficient to modify and improve the channel in the quieter seasons of the year. It is in this relation that the influence of a narrow entrance will probably be felt, namely, in restoring as soon as practicable a channel deranged by storms. This seems a promising direction for efforts to take which are intended to better the entrances of bar-bound ports on the Pacific coast. The engineering difficulties of a project to maintain a given width of entrance in a comparatively sheltered position are very much less than those which would attend the attempt to exercise control over the tidal currents 1 or 2 miles seaward on the bar, where any construction would be subject to the extremely heavy exposure to the southwest sea in the winter. Indeed, these latter difficulties have thus far deterred an attempt to extend jetties seaward from the shore. It may be reasonably doubted whether any construction could be made to stand, under this exposure, on the moving sands.

It seems, then, very desirable that the spits as they now stand be maintained. During the period of this work, the effect of the entrance, when narrowed or widened, by artificial or by natural means, would probably be demonstrated. Even if the alternative proposition of extending jetties seaward should at any time in the future be adopted, the protection of the sand spits near the roots of the jetties would probably be the first step in the work.

This subject is here mentioned in the hope that it may be thought of sufficient importance to justify the expenditure of some money in following the indication that has been mentioned.

The estimate for the work that has been indicated in the preceding pages is as follows:

1. To give a channel in front of Eureka, 10 feet deep at low-water, width 350 feet, 189,526 cubic yards dredging, at 35 cents	$66,334 10
2. To make a channel 200 feet wide, 8 feet deep, connecting the Eureka Channel with the next western channel, 186,817 cubic yards dredging, at 35 cents	65,385 95
Add 10 per cent. for contingencies	6,538 59
Total	71,924 54
3. The dredging Mad River channel to give 8 feet at low-water 10,000 cubic yards, at 35 cents	3,500 00

The influence of the second item in the estimate has been pointed out. It makes the work thorough. It, however, impairs to some extent the capacity of the western channel. It may perhaps be left to the future to determine whether this shall be done.

Leaving it out the estimate becomes	$69,834 10
Add 10 per cent. for contingencies	6,983 41
Total	76,817 51

There could be profitably expended in the first season $50,000.

Although perhaps not coming strictly within the requirements of the item of the act directing this investigation, it is suggested that an additional appropriation of $10,000 be made for the purpose of promoting the stability of the sand spits forming the heads of the harbor.

Accompanying this report will be found a traced copy of the map, in

two parts, showing the results of surveys made by assistants H. D. Gates and W. Turkington, jr., during the season just passed.

The greater part of the soundings on the original sheet are, however, omitted, the contour lines and a few characteristic soundings being regarded as sufficient.

Respectfully submitted.

G. H. MENDELL,
Lieut. Col., Corps of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 60.

TRADEWATER RIVER.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

A report on the survey of the Tradewater River.

JANUARY 29, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 27, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers dated to-day, and accompanying copy of report from Captain James W. Cuyler, Corps of Engineers, upon an examination of Tradewater River, Kentucky, made in compliance with the provisions of the river and harbor act of June 14, 1880.

H. T. CROSBY,
Chief Clerk, for the Secretary of War in his absence.

The SPEAKER,
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 27, 1881.

SIR: To comply with provisions of the river and harbor act of June 14, 1880, I have the honor to submit herewith a copy of a report to this office from Capt. James W. Cuyler, Corps of Engineers, of the results of an examination made under his direction of Tradewater River, Kentucky, with a view to improvement.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

EXAMINATION OF TRADEWATER RIVER, KENTUCKY.

UNITED STATES ENGINEER OFFICE,
Cincinnati, Ohio, January 21, 1881.

GENERAL: I have the honor to submit report of the examination or survey of the Tradewater River, Kentucky, with which I was charged by department letter of June 17, 1880.

Owing to high waters, ice, and severely cold and inclement weather prevailing during the entire time the field-work of the survey was obliged to be executed, and the small sum allotted for it, the results attained lack that accuracy which was expected, and which would have been attained under ordinary conditions. They are rather the results of a reconnaissance than of a detailed survey.

The Tradewater occupies a drainage basin of about 60 miles in length by 20 miles in breadth in Western Kentucky, with a total drainage area of about 827 square miles. The present examination covered the lower 41 miles of the river. Further up than that the stream is so small, crooked, and obstructed as to render any examination looking to river improvement unnecessary. The results developed in the stretch examined show a succession of small pools and ripples, the latter of rock in place or gravel, with a flat slope, averaging 0.65 foot per mile; very sluggish current in low-water, with rises of about 10 feet; width gradually increasing, descending from 80 to 120 feet. The valley is alluvial and banks unstable, from 10 to 40 feet above low-water on alternating sides, with low bottom-lands overflowed in high stages on the opposite sides. The calculated discharge of the river at the upper point of the examination was but 73 cubic feet per second, while 5 miles above the mouth this was 347 cubic feet, the river mean time having received several affluents, two of them of considerable size. Total fall in the 41 miles, 27 feet. At present the stream is navigated with great difficulty, owing to the natural obstructions common to this class of streams in the Ohio Valley.

The Tradewater Valley lies on the western edge of the Western Kentucky coal-field. Any improvement of the navigation of the river must have regard mainly for a coal-boat navigation, and to effectively secure this, as well as the navigation by small steamboats, the slackwater system must be introduced upon the stream. Three locks and dams, with a 10 foot lift at each, designed for a 4-foot navigation, would effect all the improvement practicable or needed in view of the small supply of water for lockage afforded by the flow of the stream. The locks should be small, 125 feet long by 20 feet wide. This limit as to length is also imposed by reason of the numerous very sharp bends in the course of the stream. Locks of the above size would accommodate as well the rafting and timber interests of the river.

The estimated cost of the above improvement is $118,000; the questions of easy accessibility, of suitable stone and timber for construction purposes, and the obtaining of the proper foundations for the works, questions the present examination could not settle definitely, might vary considerably these figures; before undertaking any such works further detailed examination is indispensable.

To improve the present natural navigation to any useful extent, it is estimated that the sum of at least $10,000 would be required.

I attach hereto the report in detail of Mr. A. Leslie Duvall, the assistant in charge of the survey.

I have the honor, general, to remain, very respectfully, your obedient servant,

JAS. W. CUYLER,
Captain of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. A. LESLIE DUVALL, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Cincinnati, Ohio, December 31, 1880.

DEAR SIR: I have the honor to submit the following report of an examination of Tradewater River, Kentucky, made by me during parts of the months of November and December, 1880:

According to instructions from you, I proceeded to a point on the Tradewater River known as Bellville, and on November 13 began the examination of the river from thence to its mouth. This river has its headwaters in the northwestern part of Christian County, Western Kentucky, and flows northwest, emptying into the Ohio, about 2½ miles below Caseyville, Union County, Kentucky, and 105 miles above the mouth of the Ohio.

I found the water very high, as there had been unprecedented rains for several days before I arrived at the place of beginning.

* * * * * * *

I was very much delayed on account of high-water in the first place, and afterwards by bad and extremely cold weather, and the formation of ice in the river, which rendered my examination both difficult and dangerous, and the limited time at my command did not permit me to go into details.

I found the river to be very crooked (as the map will show) and containing many snags and drifts; there are also three fish-traps or weirs of stone built across it; one just above the ford at Montezuma and two below the Fish-Trap Ford; there is no fish-trap now of the ford of that name.

The width of the river varies but little from Bellville to its mouth; the average width at a mean-water stage—say 5 feet over the ripples—will be about 110 to 120 feet; the river is a succession of pools and ripples.

The banks are generally fringed with forest trees, many of which overhang the river; the clearings do not generally extend to the river, particularly on the upper portion; the soil is alluvial and easily washed.

The bottom of the river is soft mud or clay, except at the fords and ripples, where it is either gravel or rock.

The distance (by the river) from Bellville to the mouth is 41.15 miles, and the fall from the ford at Bellville to the rock or natural dam, 1,000 feet from the mouth, is 27 feet; the upper portion of the river has less fall than the lower. The fall from Bellville to Nunn's Ripple, 27.44 miles, is 13.7 feet=.499 foot per mile, and from thence to the rock or natural dam, 1,000 feet from the mouth, a distance of 13.52 miles, the fall is 13.3 feet, or .983 foot per mile; the average fall from Bellville to the mouth is .656 feet per mile.

The river is navigable for rafts and flat-boats descending, and small steamboats ascending, during very high water, which occurs at intervals from November to March, but as the stage of water is very uncertain steamboats do not venture far up; at low-water, or even a mean stage, it is of course unnavigable on account of snags, drifts, detached rocks or bowlders, fish-dams, and shallow water over the ripples.

The sections at Bellville, Montezuma, Fish Trap, and Commercial, show water enough for ordinary river navigation, as they were taken at high-water stage; the lines on sections, which show probable dead low-water, are estimated from the most reliable information I could get, viz, from persons familiar with, and residing on or near the river, which information I have reason to believe is correct; neverthless I have drawn the lines of low-water below the general estimate, so as to be on the safe side; the volume of water discharged through the said sections will, I believe, be sufficient to supply a system of slackwater navigation.

The velocities which I have taken at high-water will not, of course, do for low-

water; the mean velocity in feet per second, at low-water, I get by the following formula, Trautwine, viz: $V = \sqrt{\frac{A \times F \times C}{W}} - c$ in which A = area in square feet; F = fall in feet per foot; C = constant 8975; W = wetted perimeter, and c = constant decimal .1089, which gives for the section at Bellville, on line A B, 73.17 cubic feet per second; for the section at Montezuma, 10.20 miles below, on the line E F, 76.51 cubic feet per second; for the section at Fish trap, 6.62 miles further below, on the line G H, 110.45 cubic feet per second; and at Commercial, 5.53 miles above the mouth, on the line J K, 347.10 cubic feet per second, which, I believe, would be sufficient to supply a system of slackwater navigation from the mouth to Bellville; for example, take the last volume which is at Bellville, where there is a flow of 73.17 cubic feet per second, then a lock 30 feet wide, 160 feet long, and 12 feet lift (which would be larger than absolute necessity would require), contains 57,600 cubic feet, which would be supplied at this point in 13 minutes 8 seconds. I have already made a sufficient allowance for leakage. The flow at Commercial would fill the above lock in 2 minutes 45 seconds. This river flows through a portion of Kentucky which is rich in agricultural products, as well as in mineral and timber resources.

I submit herewith a statement of products shipped per annum from Tradewater district or region drained by said river, from about Providence and Dalton, to the mouth of the river:

Tobacco	hogsheads..	3,000
Wheat	bushels..	160,000
Corn	do.....	140,000
Irish potatoes	do.....	100,000
Beef cattle	head..	10,000
Hogs	do...	20,000

In all about 20,000 tons.

There are also shipped from Lower Tradewater some 200,000 bushels = 7,692 tons of coal, making an aggregate of about 28,000 tons per annum. All of this material (except the coal) is now hauled in wagons over bad roads, from 5 to 20 miles, to find an outlet via Madisonville and Henderson, and Caseyville and Weston. The above estimate is made from information furnished by farmers, merchants, miners, and others familiar with the resources of the Tradewater region.

As to the mineral resources of this region, I can say but little from observation. I refer to Kentucky State Geological Reports of 1856, by Prof. David Dale Owen, and of 1877, by Prof. N. S. Shaler, in which the Coal Measures of Western Kentucky are described.

The coal region of Tradewater, w hich embraces the whole valley, is mentioned as containing some of the best coals, and that they are easily worked and convenient to the river for transportation. There are but few mines now worked in this region, and those few are near the mouth of the river, as the stage of water is so uncertain. The specimens of the Tradewater coal that I have seen are certainly of excellent quality, and I am also satisfied, from the geological reports, that the quantity is unlimited.

The coal that is mined on the Lower Tradewater is sent to coal depots at Caseyville and Weston on the Ohio, and it is said tLat the river steamers prefer it to any other coal.

As to the timber resources, I refer to "Timbers of Tradewater region," by Lafayette H. De Friese, under direction of Prof. N. S. Shaler, State geologist of Kentucky, Part IV, Vol. v, second series. The greater part of the valuable timber has been cut from the immediate river, but there remains a large supply on the smaller tributaries. A considerable portion of the small hickory, of 6 or 8 inches diameter, is now being cut on the lower part of the river.

That the improvement of the Tradewater River, so as to render it navigable at all times would greatly benefit the region through which it flows, no one can doubt; it would stimulate agricultural production and open an immense and valuable coal field, now practically inaccessible. The improvement for descending navigation only, would naturally consist in the removal of all snags, drifts, detached rocks or bowlders, fish-dams, &c., and the inclining trees on the banks; also the blasting a channel through the rock or natural dam near the mouth of the river, and the dredging of a channel through the bar in the Ohio opposite the mouth, or down the chute between the Kentucky shore and Tradewater Island; this would help, in that rafts and boats would not have to wait for a rise so great as to carry them over these obstructions (as now), and would not be so liable to be caught by overhanging trees. The improvement for slackwater navigation would consist in the erection of three low dams of say 10 or 12 feet each, with corresponding locks; also the removal of snags, drirts, rocks, and fish-dams, and the inclining trees on the banks, as well as the deepening of the chute in the Ohio, or dredging a channel through the bar in the Ohio, opposite the mouth of

Tradewater Under this system I believe it would be entirely practicable and very desirable to cut through one or two of the narrow necks between some of the sharp curves in the upper part of the river, thereby straightening it; I mention three low dams in preference to two higher ones, as an high dam in the upper basin of the river would be apt to cause the flooding of the adjacent lands, to some extent, at all seasons.

I recommend a system of locks and dams for the improvement of Tradewater River, in preference to the improvement of descending navigation alone, as I believe there is water enough at low stage to supply such a system, and that it would be of greater benefit. There is said to be a fine quality of sandstone adjacent to the river, which might be suitable for the construction of locks, and I have been informed that there is an abundance of excellent limestone a few miles below its mouth, on the Ohio.

An abundance of timber suitable for the construction of locks and dams can be rafted down the river.

I am indebted to Messrs. J. L. Sneed, J. F. Alloway, Dr. Winston, Mr. Talbot, Otho Nunn, J. M. Cooper, James L. Casey, and Mr. Gilchrist for information in reference to the resources of the Tradewater region, and for courtesies extended to myself and party.

Very respectfully, your obedient servant,

A. LESLIE DUVALL,
Assistant Engineer.

Capt. JAS. W. CUYLER,
Corps of Engineers, U. S. A.

List of principal bench-marks on Tradewater River.

[The elevations are above assumed low-water in the Ohio River.]

No.	Elevation.	Description.
1	60.000	On southwest corner of chimney foundation of James A. Holt's house at Bellville or Bell's Ford.
5	50.015	On root of white oak tree near right bank of river and 1,000 feet above Cullen's Mill.
10	29.225	On a knob on a sycamore tree right bank of river at Montezuma Ford.
16	34.098	On root of wild cherry tree on left bank of river at Fish Trap Ford.
20	25.868	On root of box-elder tree on right bank of river about 1,600 feet below the mouth of Crab Orchard Creek.
28	19.410	On root of white gum tree on right bank of river at Grangersville or Commercial Point.
32	30.968	On root of white gum tree on right bank of river 800 feet from the mouth.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. No. 61.

GEORGETOWN HARBOR AND LYNCH'S AND WATEREE RIVERS, SOUTH CAROLINA.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of surveys of Georgetown Harbor and Lynch's and Wateree Rivers, South Carolina.

JANUARY 29, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 25, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers of yesterday's date, and accompanying copies of reports from Capt. C. B. Phillips, Corps of Engineers, upon examinations and surveys, made in compliance with the provisions of the river and harbor act of June 14, 1880, of Georgetown Harbor, South Carolina, Lynch's River, South Carolina, and Wateree River from Camden, S. C., to its mouth.

H. T. CROSBY,
Chief Clerk, for the Secretary of War in his absence.

The SPEAKER
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 24, 1881.

SIR: In compliance with provisions of the river and harbor act of June 14, 1880, I have the honor to submit herewith copies of reports to this office from Capt. C. B. Phillips, Corps of Engineers, of the results of examinations and surveys made under his direction at the following localities with a view to improvement:

1. Georgetown Harbor, South Carolina.

2. Lynch's River, South Carolina.
3. Wateree River, from Camden, S. C., to its mouth.

Very respectfully, your obedient servant,

H. G. WRIGHT,
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

SURVEY OF GEORGETOWN HARBOR, SOUTH CAROLINA.

UNITED STATES ENGINEER OFFICE,
Norfolk, Va., January 18, 1881.

GENERAL: The river and harbor act approved June 14, 1880, provided for an examination or survey of Georgetown Harbor, South Carolina. This survey having been by your letter of June 17 last assigned to my charge, I intrusted the work to Assistant Charles W. Forster, who, after organizing a party, commenced the field-work on the 19th of last August and completed the same on the 26th of September, * * * and his report upon the survey and a tracing from his map exhibiting the condition of the harbor and its proposed improvement are respectfully transmitted herewith.

Georgetown is situated at the head of Winyah Bay, South Carolina, at the confluence of the Pee Dee, Waccamaw, Black, and Sampit rivers. It is a port of considerable and growing importance, and will become a large city when its natural advantages are made use of. It is the natural outlet of a vast section of fertile country, the principal products of which are cotton and rice. Almost inexhaustible quantities of timber and naval stores are also to be found on the streams tributary to Winyah Bay.

After passing the bar at the entrance to Winyah Bay, the only obstruction met with by vessels trading with Georgetown is a bar at the entrance to the harbor, or, really, at the mouth of Sampit River. This bar is 2,850 feet in length, and affords a depth of only about 9 feet at ordinary low-water. As vessels drawing 12 feet of water frequently leave Georgetown, much detention occurs while waiting for high-water. It is proposed to obviate this difficulty by dredging a channel across this bar 200 feet in width at bottom and 12 feet in depth at ordinary low-water.

The course of the proposed dredged channel is shown on the accompanying map. The character of the bottom is such that it may be reasonably expected that a dredged channel will remain for a long period of years.

As per Mr. Forster's estimate, which appears to be a reasonable one, the cost of this work will be a trifle over $14,000. I think that this amount might well be expended in giving a great impetus which no doubt would follow to the trade of such an important port.

Georgetown, S. C., is a port of entry.

I am, general, very respectfully, your obedient servant,

CHAS. B. PHILLIPS,
Captain of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. CHARLES W. FORSTER, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Norfolk, Va., January 17, 1881.

CAPTAIN: I have the honor of submitting to you my report of the survey of Georgetown Harbor, South Carolina, made by me under your verbal instructions.

* * * * * * *

Georgetown is the only port of entry between Wilmington, N. C., and Charleston, S. C. Lying at the head of Winyah Bay, at the confluence of the Waccamaw, Pee Dee, Black, and Sampit rivers, it is the natural outlet of an immense extent of back country, including the entire counties of Georgetown and Horry, and a large portion of Williamsburg, Marion, Darlington, Chesterfield, and Marlborough counties.

At present, as stated in my report on the Waccamaw and Pee Dee rivers, made last year (see Chief of Engineer's Report for 1880, appendixes I 16 and I 15), a large proportion of the commerce of these rivers goes through to Charleston for distribution on account of the want of shipping facilities at Georgetown.

The present commerce of Georgetown is carried on principally through a line of eight "terns," or three-masted schooners, Messrs. Congdon & Co. being part owners, one or two of them having been built in these waters. These vessels average 450 tons and 12 feet draught apiece.

The following will give an idea of the amount of commerce of this port:

There are about 175 sail of vessels passing over the bar a year. The tonnage of these vessels ranges from 50 to 500 tons each, and the draught of water from 6 feet to 12 feet 3 inches. There are shipped over the bar in this time by sailing vessels and steamboats, as follows: 20,000,000 feet of lumber, 250,000 barrels naval stores, 15,000 casks of rice, 15,000 to 18,000 bales of cotton.

With regard to the lumber trade, Mr. David Risley, one of the lumber merchants, states that he alone loads 52 vessels per annum, of from 150 to 400 tons capacity, and that he is now engaged on improvements which will, when completed, double his shipments.

Parties from Wilmington are also now prospecting with a view of erecting saw-mills in, or in the vicinity of, Georgetown.

The shipment of rice direct to northern ports is also increasing since the establishment of a large rice-pounding mill in the town, during the past eighteen months.

The harbor consists of about one mile of the Sampit River. The survey was commenced at the upper end and extended to the mouth, and as far into the bay as buoy No. 9 and the United States Coast Survey station. In the upper part there is from 30 to 40 feet water, shoaling to 14 and 15 feet in the more frequented parts around the wharves, and at the mouth to 8 and 10 feet. It will be seen by the accompanying maps that the 12-foot contour includes the whole of the interior of the harbor with the exception of a shoal commencing opposite the lower wharves and extending 1,500 feet down stream, but which at present does not form any important obstacle. The difficulty lies in the shoal across the mouth of the harbor, which extends clear across for a distance of 2,850 feet with an average depth of 9 feet, and is composed of sand and mixture of sand and mud.

To obviate this difficulty would require the dredging of a channel 200 feet wide, the center line commencing 400 feet northeast of buoy No. 9, and running N. 30½° W. 2,100 feet, and from there N. 50° W. 750 feet to the 12-foot contour. To give an increase of 3 feet in this channel will require the removal of 64,327 cubic yards.

To dredge this at 20 cents per cubic yard would cost	$12,865 40
Add 10 per cent. for contingencies	1,286 54
Total	14,151 94

The people of Georgetown have begun to wake up to the importance of their harbor since (on account of its being the nearest on the coast in the direct line from Saint Louis) railroad men have turned their attention to it as a probable outlet for Western produce, and great interest is now shown in the improvement of the harbor and bar, and I respectfully recommend the above improvement to be made.

I am, very respectfully, your obedient servant,

CHAS. W. FORSTER.

Capt. CHAS. B. PHILLIPS,
Corps of Engineers, U. S. A.

EXAMINATION OF LYNCH'S RIVER, SOUTH CAROLINA.

UNITED STATES ENGINEER OFFICE,
Norfolk, Va., January 17, 1881.

GENERAL: The river and harbor act of June 14, 1880, provided for an examination or survey of Lynch's River, South Carolina. The execution of this work having been assigned me by your letter of the 17th of June last, I placed the field work in the hands of Mr. J. P. Darling, assistant engineer; * * * and tracings, seven in number, from the original maps, together with his report, are respectfully transmitted herewith.

Lynch's Run is a tributary to the Great Pee Dee River, emptying into the latter from the west, at a point about 30 miles above the confluence of the two Pee Dees.

The stream drains an exceedingly fertile section of country. The products are mainly shipped by rail, the shipments by river being confined almost exclusively to timber in the form of rafts.

Mr. Darling in his report gives a detailed description of the river, and points out the difficulties to be overcome in order to make the river a navigable stream. The river is exceedingly tortuous, shallow, and narrow, and to attempt to improve it for even light-draught steamboat navigation would involve an immense expenditure of money. At one point near the mouth the river is but 20 feet in width, and at other points only 1 foot of water can be found, with a bottom of compact sand generally, and at one point of solid rock.

At present a light-draught skiff cannot navigate the river without frequently stopping to haul over obstructions.

The removal of the worst obstructions, such as sunken logs, snags, fallen trees, &c., would no doubt increase to a great extent the lumber trade upon the river, and steamers might be induced to navigate the stream during the "flush-water" months of the year; but beyond the removal of said obstructions I cannot properly recommend any other plan of improvement.

To remove the snags, logs, fallen and overhanging trees upon the river, the number of each in Mr. Darling's estimate being by actual count, would require the expenditure of about $45,000. This amount, if appropriated, could be profitably expended during a single fiscal year. * * *

Lynch's River is in the collection district of Georgetown, South Carolina.

I am, general, very respectfuly, your obedient servant,
CHAS. B. PHILLIPS,
Captain of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. JOHN P. DARLING, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Norfolk, Va., January 15, 1881.

CAPTAIN: I have the honor to present herewith my report with accompanying tracings (seven sheets) on the recent examination of Lynch's River, South Carolina, from the Wilmington, Columbia and Augusta Railroad Bridge to its mouth.

In accordance with your instructions, after the completion of the surveys in North Carolina, under my charge, I proceeded at once to Cartersville, a station on the Wil-

mington, Columbia and Augusta Railroad, 1 mile from the point where we were to commence work.

Having learned the nature and condition of the river before leaving Wilmington, I found it expedient to bring with me a small skiff, as the river was entirely destitute of such means of transportation. The difficulties to be overcome in the work necessitated our building an extra boat at Cartersville to carry our party of seven and camp equipments.

Lynch's Creek or River, as the last session of the State legislature has seen fit to name it, is a swift-running, narrow, crooked, stream, filled with logs, snags, and fallen trees to such an extent as to make navigation impossible, even for our small skiffs, without the daily and constant use of the ax. Rising in the foot-hills in Union County, North Carolina, it takes a southeasterly course to Cartersville, changing to east and then north, whence, after leaving Effingham, it runs southeast for some miles, gradually bearing to the eastward again, emptying into the Pee Dee above the Black River. Acting as a boundary for Darlington and Marion counties on the left, and Kershaw, Sumter, Clarendon, and Williamsburg on the right, it finds its way through the most fertile and prosperous cotton-raising district of the State, draining a large section between the Wateree and Pee Dee rivers.

From Cartersville on either side of the stream, with the exception of a few miles of high land near Effingham Station on the Northeastern Railroad, dense growths of swamp woods abound, with here and there an occasional ton-timber landing. The rafting of this material seems to be the only profitable use to which the river can be put without a great outlay of money.

Launching our boats at the Wilmington, Columbia and Augusta Railroad Bridge, progress to our Old Effingham, a distance of 35.6 miles, was slow and laborious.

Traveling at current speed we were enabled to make a very careful examination of the many crooks and bends, giving bearings, distances, and widths, as shown on the tracings, and an accurate enumeration of the logs, snags, fallen and leaning trees, and other impediments to navigation. Owing to the extreme low-water, which lasted throughout the work, the soundings which were taken at intervals of about 50 feet required no reduction. Through this section the river has a width of from 60 to 100 feet; it runs over a hard, sandy bottom, and in many places shoals to within a few inches of the surface, owing partly to the great accumulation of logs buried under the sand. The banks are low and swampy, the thick foliage of the overhanging trees in many instances entirely obscuring the sun. In many places, logs and fallen trees completely blocking our passage, it became necessary to cut a way through when the boats could not conveniently be lifted over. This difficulty necessitated having the baggage carried by land from camp to camp.

From Old Effingham to the Northeastern Railroad Bridge, a distance of 4 miles, and to the rapids or shoals, 3 miles more, the river has an average width of 125 feet, with long, straight reaches, and high, cultivated banks. From about 600 feet above Old Effingham to the railroad bridge, the river in several places passes over a hard sandstone formation, which occasionally rises to within 15 inches of the surface. This is probably the same stratum of rock which traverses this section of the country, making its appearance on the Pee Dee at Stone Landing, and in the form of rapids on the Upper Santee.

The rapids 3 miles below the railroad bridge are 100 feet long, with an average depth of 1 foot, and a fall of 0.6 foot. These rapids are filled with logs lodged in the stream. From here to Johnson's Ferry, a distance of 39.7 miles, we have a repetition of the sharp crooks and bends, rapid current, and many logs and snags. In this distance the river is narrow, and runs through low, thick swamps, with an occasional bluff. The depth varies from 1 to 7 feet, with an average width of 60 feet, although in several instances the stream narrows considerably. At the Wild Cat Rapids, one-half mile above Canebreak Landing, the river for a distance of 200 feet flows through a cut, with an average width of 20 feet, and a fall of 2 feet; the current is very swift.

From Johnson's Ferry to the mouth, a distance of 7½ miles, the river if possible becomes more crooked, meandering through a dense swamp, with shorter reaches and more acute bends; the current runs with a velocity of about 3 miles per hour, the width not averaging over 50 feet; 200 feet below Persimmon Landing is Lawrence's Cut, which is a shorter passage to the Pee Dee, via Clark's Creek; which creek makes from Lynch's, 1 mile above its mouth, to the Pee Dee, 11 miles below, forming Snow Island, of Revolutionary fame; we were unable to examine this route, on account of low-water. Two hundred yards below Clark's Creek, the river has washed a new channel, forming a small island, 500 feet long, called Needles Eye; in this channel there are rapids 250 feet long, with a fall of about 2 feet. The lower end is completely blocked with logs and fallen trees.

Between the rapids and the mouth, a distance of nearly a mile, the river is again obstructed with drift-wood in several places. At its mouth there is a large sand-bar, which nearly fills the entrance to the river.

The cost of improving this river for steamers would be so great that I do not think

the commerce would justify Congress in doing so but for ton timber, of which there are about 10,000 sticks annually rafted from Cartersville. I have made the following estimate for removing snags, logs, &c.:

No.	Description.	Cost.	Amount.
1,638	Snags	$7 00	$11,466 00
4,182	Logs	4 00	16,728 00
404	Fallen trees	4 00	1,616 00
3,856	Leaning trees	3 00	11,568 00
			41,378 00
	Add 10 per cent. for superintendence		4,137 80
	Total		45,515 80

The number of snags, logs, &c., are by actual count, and therefore I have allowed a liberal price to cover those that were not seen.

* * * * * * *

Table of distances from Wilmington, Columbia and Augusta Railroad Bridge, on Lynch's Run, to its mouth.

Landings, &c.	Intermediate distances, in miles.	Total distance, in miles.
Conterborough Landing		6.4
Hicks's Landing	8.9	15.3
Floyd's Landing	3.2	18.5
Jones's Bridge	3.0	21.5
Dill's Bluff	1.0	22.5
Sampson's Landing	2.8	25.3
Lynch's Bridge	5.2	30.5
Old Effingham	5.1	35.6
Northeastern Railroad Bridge	4.0	39.6
Rapids	3.3	42.9
Anderson's Bridge	5.8	48.7
Bass's old bridge place	7.6	56.3
Edith's Landing	9.7	65.0
Wild Cat Rapids	2.9	67.9
Half Moon Landing	3.0	70.9
Little Half Moon Landing	0.3	71.2
Timmond's Landing	6.9	78.1
Johnson's Ferry	4.5	82.6
Persimmons Landing	3.5	86.1
Clark's Creek	3.0	89.1
Pee Dee River	1.0	90.1

I am, very respectfully, your obedient servant,

JNO. P. DARLING,
Assistant Engineer.

Capt. C. B. PHILLIPS,
Corps of Engineers, U. S. A.

SURVEY OF WATEREE RIVER, FROM CAMDEN, SOUTH CAROLINA, TO ITS MOUTH.

UNITED STATES ENGINEER OFFICE,
Norfolk, Va., January 15, 1881.

GENERAL: Your letter of June 17 last placed me in charge of an examination or survey of the "Wateree River from Camden, S. C., to its mouth," said examination or survey having been provided for in the river and harbor act of Congress approved June 14, 1880.

I assigned the field work to a party in charge of Mr. J. P. Darling,

assistant engineer, * * * * and tracings from the resulting maps, two in number, together with his own report upon the survey are transmitted herewith. * * *

The Wateree River is merely a continuation of the Catawba River, which rises in the western part of North Carolina, receives its name at the confluence of the Catawba and Wateree Creek, and retains it until it unites with the Congaree River, when it is known as the Santee, which finally empties into the Atlantic at a point about 10 miles south of Winyah Bay, South Carolina.

The upper portion of the Wateree is a rapid mountainous stream, with a fall of over 4 feet to the mile. Below Camden, however, the fall is less, and the river could be made navigable for light-draught steamers without a very great outlay. One such steamer now plies upon the river, engaged solely in local traffic. The main obstructions to navigation are fallen and overhanging trees, snags, stumps, &c., and a few very abrupt bends, around which it is difficult to pass.

The country through which the Wateree flows is very fertile, and a communication to the sea via Santee River would do much to develop its resources.

Any plan for the improvement of navigation of this river should contemplate the removal of all obstructing logs and snags, and the cutting off of five projecting points.

In the estimates submitted herewith, a channel 80 feet in width and 4 feet in depth at lowest stage is proposed at the cuts off.

Mr. Darling estimates that an expenditure of about $54,000 would be required to accomplish the above.

It appears to me that this amount might be expended upon the river to good advantage. If appropriated, the whole amount could be profitably expended during a single fiscal year.

An examination of this river was made under my direction during the fall of 1879, and attention is respectfully called to Senate Executive Document No. 161, Forty-sixth Congress, second session, in which my report upon same will be found.

The Wateree River is in the collection district of Georgetown, South Carolina.

I am, general, very respectfully, your obedient servant,

CHAS. B. PHILLIPS.
Captain of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. JOHN P. DARLING, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Norfolk, Va., January 13, 1880.

CAPTAIN: I have the honor to submit the following report of a survey of the Wateree River from Camden, S. C., to its mouth, made under your direction during October and November, 1880. The accompanying tracings, two in number, show the meanderings of the stream and depth of water at an unusually low stage, according to the testimony of the people along the route.

The general course of the river is southerly, with some very large bends and many abrupt crooks. The upper portion flows through Kershaw County, and farther down it forms the boundary between Sumter and Richland.

The present head of navigation is at Camden, a flourishing and prosperous town with upwards of 3,000 inhabitants. It is the center of trade for the surrounding counties, which are classed among the most fertile in the State.

There are some very large cotton, rice, and corn plantations along the course of the river, but the exact amount of their productions cannot be ascertained because of their different channels of transportation.

The distance from Camden to the mouth is 64.34 miles, where, by confluence with the Congaree River, it forms the Santee, the principal river of the State, forming thereby a link in a chain of rivers from Western North Carolina to the Atlantic Ocean. There can be no thorough shipping until the Santee is also improved, making Charleston the nearest and most convenient market.

The width of the river averages about 225 feet, and at present there are but few places with a depth of less than 4 feet for the first 20 miles. Cultivated land extends mostly to the river, but the banks are low, and levees have been constructed to protect the fields from overflow, there being a periodical rise in the river of about 30 feet. Further down, the banks are generally low and swampy, the swamps extending from 3 to 4 miles on either side, and are covered with splendid growths of timber, consisting of gum, cypress, pine, and oak, which remain in their native abundance, and would become a valuable adjunct to the products of the country if the means of transportation were sufficient. Owing to the extensive swamps, but few landings exist.

Snags, logs, and drifts abound the whole length, some of the drifts, consisting of snags, logs, and fallen trees piled upon each other, extend almost entirely across the river, making it not only difficult but dangerous even for boats of the lightest draught to navigate the stream. Sand-bars have been formed at most of the bends, but do not generally interfere.

At places shoals have been formed by sunken logs and snags, which the action of the water would remedy if they were removed. There are a great many leaning trees that would eventually fall into the river, which it will be necessary to remove. Some of the bends are so abrupt that steamers of any considerable size would find great difficulty in navigating, making it necessary to cut off some of the points. These are shown on the accompanying tracings. "Breakovers" at many of the bends are caused by high water.

The Wilmington, Columbia and Augusta Railroad crosses the river 51.66 miles below Camden. The bridge is constructed of wood, without a draw; its length is 344 feet, height of track above low-water 40.6 feet, height of bottom of bridge 16.9. The Camden branch of the South Carolina Railroad having its terminus at Camden, traverses the country east of the river and nearly parallel with it, crossing 33 miles below by rail, and 56.7 by water, connecting at Kingsville, 5 miles from the river, with the main branch between Charleston and Columbia. This bridge is also built of wood, without a draw; length 418 feet, bottom 15.3 feet above low-water, height of track 18.9 feet. The high rates of freight on these roads, owing to the railroad monopoly, is the great drawback to this section of the country.

There is one small steamer plying between Camden and the Wilmington, Columbia and Augusta Railroad Bridge, but she can carry comparatively little of the produce that would be shipped if the river was opened to larger boats, and offered fewer obstacles to navigation. Between these points the following amount of produce was shipped during the year 1880.

12,000 barrels rosin and spirits.
4,000 bales cotton.
30,000 bushels rice.

These statistics were kindly furnished me by Mr. W. L. Arthur, of Camden.

The following is my estimate for cutting off points and removing obstructions.

Place.	Quantity.	Description	Cost.	Amount.
Cut No. 1 ..... cubic yards ..	11,573	Dredging	$0 25	$2,893 25
Cut No. 2 ..... do	15,111	.....do	25	3,777 75
Cut No. 3 ..... do	24,026	.....do	25	6,006 50
Cut No. 4 ..... do	5,476	.....do	25	1,369 00
Cut No. 5 ..... do	10,666	.....do	25	2,666 50
	2,808	Snags	5 00	14,040 00
	2,104	Fallen trees and logs ..	3 00	6,312 00
	3,264	Leaning trees	2 00	6,528 00
Removing 4 drifts of logs and snags			300 00	1,200 00
Removing obstruction, wreck from old bridge			200 00	200 00
Total				44,993 00
Engineering and contingencies, 20 per cent				8,998 60
Total				53,991 60

The estimate for cuts is for 4 feet of water, and 80 feet width on bottom.

I am, captain, very respectfully, your obedient servant,

JNO. P. DARLING.

Capt. CHAS. B. PHILLIPS,
Corps of Engineers, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 62.

CERTAIN RIVERS IN MISSOURI, ARKANSAS, AND TENNESSEE.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

Reports of surveys of certain rivers in Missouri, Arkansas, and Tennessee.

JANUARY 29, 1881.—Referred to the Committee on Commerce and ordered to be printed.

WAR DEPARTMENT,
Washington City, January 27, 1881.

The Secretary of War has the honor to transmit to the House of Representatives, for the information of the Committee on Commerce, a communication from the Chief of Engineers of yesterday's date, and accompanying copies of reports from Maj. W. H. H. Benyaurd, Corps of Engineers, upon examinations made in compliance with the provisions of the river and harbor act of June 14, 1880, of Saint Francis River, Missouri and Arkansas; Obion River, Tennessee; South Forked Deer River, Tennessee; North Forked Deer River, Tennessee; and of The Bay, a tributary of Saint Francis River, Arkansas.

H. T. CROSBY,
Chief Clerk, for the Secretary of War in his absence.

The SPEAKER,
of the House of Representatives.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., January 26, 1881.

SIR: I have the honor to submit herewith copies of reports to this office from Maj. W. H. H. Benyaurd, Corps of Engineers, of the results of examinations made under his direction to comply with requirements of the river and harbor act of June 14, 1880, with the view to improvement at the following localities, viz:

1. Saint Francis River, Missouri and Arkansas.

2. Obion River, Tennessee.
3. South Forked Deer River, Tennessee.
4. North Forked Deer River, Tennessee.
5. The Bay, a tributary of Saint Francis River, Arkansas.

Very respectfully, your obedient servant,

H. G. WRIGHT.
Chief of Engineers, Brig. and Bvt. Maj. Gen.

Hon. ALEXANDER RAMSEY,
Secretary of War.

EXAMINATION OF SAINT FRANCIS RIVER, MISSOURI AND ARKANSAS.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., January 10, 1881.

GENERAL: I have the honor to submit herewith a report upon an examination of the Saint Francis River, Missouri and Arkansas, made under my direction under the provisions of act of Congress approved June 14, 1880.

The law provided for two examinations of the river, as follows:

Saint Francis River from Greenville, Missouri, and Saint Francis River from Greenville, Missouri, to the Cairo, Arkansas and Texas Railroad.

As the former necessarily included the latter, the examination was made continuous from Greenville, Mo., to Lester Landing, Ark., (to which point the improvement of the Lower Saint Francis has been carried under former appropriations), and the results are embodied in one report.

The field party was in charge of Mr. J. B. Rohrer, assistant engineer, and his report, which will be found annexed, gives a sufficiently clear idea of the character of the stream, the obstructions to navigation, and the difficulties to be overcome in attempting to make the river navigable through the whole length examined.

From Greenville to the Cairo, Arkansas and Texas Railroad, a distance of 66 miles, the obstructions to navigation are shoals, snags, logs, bowlders, and drift-piles, the latter, in places, extending more than half way across the stream. The estimated cost of improving this stretch of the river is $24,426, and then only boats of the smallest class would probably navigate the river.

At the railroad-crossing the bridge is without a draw-span, consequently all communication for steamboats is cut off between the upper and lower sections of the river.

From the railroad to Lester Landing, in addition to the obstructions in the shape of snags, logs, and leaning timber, the river is at points completely blockaded by accumulations of drift, forming obstructions somewhat similar, though less in extent, to those that formerly existed in the raft region on Upper Red River, Louisiana. In the Sunk Land region, the channel of the river is at times completely lost in the timber and undergrowth. To improve this stretch of river, we should have to resort to dredging in addition to the removal of the above obstructions. No estimate for this is presented, as a much more detailed and extended examination would have to be made, so as to select the best route through the lake. Sufficient information has been gained, however, to justify the statement that the cost of improvement will greatly overbalance any perspective advantage to be gained. The estimated cost

of removing the first raft below the railroad-crossing is placed at not less than $20,000.

An examination of the river from Greenville, Mo., down was made under the direction of Colonel Simpson in 1873, the report upon which will be found in the report of the Chief of Engineers for that year, page 476. Colonel Simpson recommended that, as the commerce of the country would not justify the expenditure of so large a sum as would be required to make the river navigable, no appropriation be made. In this I concur.

No reliable statistics of the commerce could be gained, but it is comparatively small. The upper section of the river runs almost parallel to the Saint Louis and Iron Mountain Railroad, and at a distance from it of about 10 miles. The railroad at present transacts all the business of that section of the country.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. J. B. ROHRER, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., January 10, 1881.

MAJOR: I have the honor to submit the following report of the examination of the Saint Francis River from Greenville, Mo., to Lester Landing, Ark.

In accordance with the instructions received on November 23, 1880, I proceeded to Greenville, and, after procuring my outfit, commenced the examination.

My estimate of the length of river from Greenville to the Cairo, Arkansas and Texas Railroad is 66 miles, and from the railroad to Lester Landing 164 miles, making the total length of river examined 230 miles.

Greenville, the county seat of Wayne County, Missouri, is situated 15 miles east of the Iron Mountain Railroad on a flat area of ground on the left bank of the river; has two stores and about 125 inhabitants.

The surrounding country is hilly, on which there is very fine pine timber. Other varieties of timber, as oak, hickory, ash, walnut, sugar tree, maple, gum, and hackberry, are in the region and along the river.

The stage of the water at the beginning of the work was about 1½ feet above low-water, with an oscillation at that point of 25 feet.

From Greenville to Cutler's Mill, a distance of 6 miles, the river is from 75 to 200 feet wide; has 1 mile of leaning trees, about fifty snags, and seven shoals, the latter varying in depth at low-water from 6 inches to 2 feet. The worst of these shoals can be greatly improved by confining the water to one channel instead of having two or more chutes, as at present. The chutes can be closed by stone dams, the material for which can be obtained in the immediate vicinity.

The banks in this reach of river vary in height from 6 to 25 feet, except about 1 mile below the town, where the river flows at the foot of rocky bluffs which are about 200 feet high.

Near Cutler's Mill there is a spring which has a regular flow, and of such a capacity that in the low-water season it is a prominent feeder to the river.

From Cutler's Mill to Stanley's Shoals, a distance of 14 miles, there are sixteen shoals, varying in depth in low-water from 6 inches to 2½ feet. A number of these shoals can be improved by concentrating the water to one channel by low-water dams. Other shoals are caused by logs and bowlders, which catch the sand and gravel that may be moving on the bottom of the river. The shoals created by the latter method are generally very short. This reach of river varies in width from 75 to 250 feet, has about 5 miles of leaning trees, and contains one hundred snags.

From Stanley's Shoals to Indian Ford, a distance of 21 miles, there are about 6 miles of leaning and overhanging trees, eleven shoals, and one hundred snags.

There are miles in this reach of river on which very little work need be done, being generally of a good width and depth and free from dangerous snags.

From Greenville to Indian Ford the river very often flows along the bluffs, but at the ford it leaves the hills and passes through the low land, having banks from 10 to 20 feet high.

About 9 miles above Indian Ford the Mingo River, a stream about 75 feet wide, enters the Saint Francis. Smaller streams also furnish water to the river.

From Indian Ford to the Cairo, Arkansas and Texas Railroad, a distance of 25 miles, I found a few miles of leaning trees, 120 snags, and several drift-piles, the latter extending half way across the river.

About 1½ miles below the railroad is a drift-pile about 200 feet in length, completely obstructing the river. It is composed of logs, trees, and the offal of the saw-mill at the railroad bridge.

The "Big Raft," the next obstruction in the river, is about 25 miles below the railroad. By the time I arrived at the raft the river had risen to within 3 feet of high-water, and about 12 feet above low-water. At this stage of the water I was unable to examine more of the raft than the top, which is higher than the banks and is overgrown with tall weeds.

A description of the raft is found in the Report of the Chief of Engineers for 1873, page 477, in the report of Mr. McKown on his examination of the Saint Francis River. The part pertaining to the raft is as follows:

"At this place the river is choked with a great quantity of drift, which is piled up 12 or 15 feet high, composed of logs, trees, timber, and all the *débris* that would naturally find its way into the stream during high-water. The raft is in two principal parts: the upper is about 800 feet long, 300 feet wide, and 12 feet deep; then an interval occurs of about 1,800 feet, which contains some drift, and is full of snags; then we come to the lower portion, which is about 1,000 feet long, 300 wide, and 15 deep."

The positions of the different portions of the raft are the same now as when examined by Mr. McKown, and the indications are such as to justify me in accepting his general dimensions. The raft has undoubtedly grown at the upper end, but portions of the lower end have broken away and lodged farther down the stream.

Leaving the raft and proceeding onward, we find for the next 20 miles the banks to be from 2 to 10 feet high, the river very crooked, and from 200 to 300 feet wide, although in many places half the width of the stream is grown up with willows. In this reach of river there are six drift-piles, one of which extends across the channel; these drifts vary from 5 to 50 feet in length. Four trees have fallen into the stream, obstructing the channel and affording fine opportunities for forming larger obstructions.

There are seventy-five snags, about 5 miles of leaning and overhanging trees, and in two places large trees stand in the channel. Many logs and snags are undoubtedly covered at this high stage of water. In this reach there are several shoals, which are about 2 feet deep in low-water. The material on the bottom of the river is sand.

In the next 20 miles we have generally, a very crooked stream although there are a few stretches of fine river. The width ranges from 200 to 300 feet, except in one place, where it divides into two chutes, 75 and 150 feet respectively. The larger of these chutes is blockaded by a drift-pile whose length is 200 feet. Four other drift-piles close about half the width of the river, and in several instances are on the channel side of the stream in the bends.

There are sixty snags and about 10 miles of leaning and overhanging trees, the latter being exceedingly bad on the bends. The banks vary from 2 to 6 feet high, those under 4 feet being covered in very high water.

From the lower end of the preceding reach to Chalk Bluff, a distance of 15 miles, the river is very crooked; more especially on the latter part of the reach, where the stream is formed by a succession of bends—some being very sharp.

The river is from 250 to 300 feet wide, its banks varying from 4 to 15 feet, except in a few places, where the bottom lands are covered with water. It is obstructed by nine drift-piles, two of which extend across the stream, their respective lengths being 10 and 100 feet. About 5 miles of leaning and overhanging trees, together with seventy-five snags, would interfere with navigation.

Chalk Bluff is a small town situated amongst the hills on the right bank of the river. The river leaves the hills shortly after passing the village.

From Chalk Bluff to Brown's Ferry, a distance of 17 miles, the river is from 200 to 300 feet wide, has seventy snags, about 6 miles of leaning trees, and seven drift-piles. Two drift-piles extend across the river, one of which is 200 feet long. Many of these drift-piles have weeds growing on them, resembling, in this respect, the "Big Raft."

Some of the bottom lands are covered with water, the latter being 1½ feet below high-water.

About 1 mile below Chalk Bluff there is an old mill-race, whose width and length are about 50 feet and one-fourth of a mile respectively, through which there is a strong current. About 2½ miles of river, almost devoid of current, intervenes between the entrance and outlet of the mill-race.

At Brown's Ferry the river divides into two chutes, each 150 feet wide, which form Seven-Mile Island.

Near the head of the right chute is an accumulation of logs, trees, and *debris* in

general, which obstruct the channel. The left chute is somewhat better, although it has a great number of fallen trees, logs, is nearly grown up in many places with willows, has about twenty-five snags, and near the foot of the island is closed by a drift 200 feet long. Where the waters come together again they form a clean river, 300 feet wide and 3 miles in length. From this point to the head of Ten-Mile Island, a distance of 3 miles, we have two drift-piles that completely obstruct the river, being respectively 50 and 200 feet long.

For about half a mile of this reach, thirty snags, growing trees and brush, fallen trees and tree-tops, mingled with logs, form such a continuous mass as to make navigation by skiff very difficult.

On the lower end of the reach the water is over the banks, being a few inches deep in the bottoms. A two-foot levee has been built on the Missouri side of the river by the authorities of Dunklin County; but it is of little value, as it is broken in many places.

Ten-Mile Island is formed by the river dividing into two streams, and are known as the Saint Francis River and Varner's River. The former is closed by drift and vegetation, the latter being the navigable channel.

The head of Ten-Mile Island is the beginning of the "Sunk Lands."

The entrance to Varner's River is about 50 feet wide, and for the first mile is very crooked, and has tupelo gum trees growing in the channel. Logs crossing the stream about every 300 feet and leaning trees skirting the water-way are the greatest additional obstructions to be found in this distance.

On Ten-Mile Island and on the mainland there are some good farms, the cultivated land on either side of the river being from 2 to 5 feet above the water. The water at this stage was 6 inches below high-water and about 1 foot above low-water, making the oscillation 1½ feet. This small oscillation is caused by the water spreading over a large area of land. On the east side of Ten-Mile Island, the situation of Varner's River, the width of the water is about 1 mile, and is grown up with timber, principally tupelo gums.

The Varner's River channel was cleaned some years ago by a man by the name of Suggs, under a contract with the authorities of Dunklin County, Missouri. This channel for the next 10 miles is exceedingly crooked and varies in width from 25 to 100 feet, except near the lower end of the reach, where it passes through a series of lakes, or, more properly speaking, areas devoid of timber. In this reach there are about twenty trees, an equal number of snags, and numerous cypress knees obstructing the channel.

The depths in this 10 miles of river are as follows: for ½ mile the depth is 2 feet; for 4½ miles, 3 to 4 feet; and for 5 miles, 5 to 6 feet. In many places in this reach the bottom is covered with vegetation.

For the next 3 miles the channel is generally defined by timber, is from 100 to 200 feet wide, and from 7 to 9 feet deep. Aquatic plants then make their appearance in abundance. Flag defines the channel, which varies in width from 50 to 200 feet, and is skirted with smart-weed, which increases in quantity as we move down the stream, gradually narrowing the channel and finally closing it. The smart-weed is about 7 feet long, and extends above the surface of the water, being, in the thick growth, a formidable obstruction. The distance through the worst growth is about 1 mile.

For the next 3 miles the channel winds amongst the trees and vegetation, giving varying widths, from almost no channel to fine stretches of river.

Two miles farther on we have good river, but in the following 6 miles the channel, in some places, is narrowed up by smart-weed, and for the greater distance is lost in tupelo gum timber, there being no defined channel. At the end of this reach the waters again come together; but this feature is not noticeable, as the Saint Francis River is choked with vegetation.

In the next 12 miles, which brings us to Bolin's Ferry, the channel is from 2½ to 7 feet and sometimes over 10 feet deep, and winds through the vegetation, with widths varying from 25 to 500 feet, except in a few places where it is entirely closed.

In traveling over the last two reaches an occasional island is seen, otherwise there is no land in sight, the river being some miles in width.

At Bolin's Ferry the water is about 1½ feet below high-water, and has an oscillation of about 3½ feet.

The channel for the next 11 miles is open, varying in width for part of the distance from 25 to 150 feet, depth from 3½ to 6 feet, and for about 2 miles the channel is almost straight, about 500 feet wide, and over 10 feet deep. This fine stretch of river crosses the most southerly boundary of Missouri.

The channel of the succeeding 5 miles is about 150 feet wide, 5 feet deep, and is well defined by flag.

Three miles more brings us to Lester Landing, Arkansas. This last reach of river passes through a cypress brake, and has an average depth of 4 feet. The steamer Marianna occasionally makes trips through the unimproved channel as far as the Missouri line—the owner of the boat having a plantation in that vicinity. Some of the

land on the islands in the upper part of the "Sunk Lands" are cultivated, but the only product now shipped to market is cotton. Nearly all of this staple is brought to market by way of Malden, thence by rail to New Madrid, on the Mississippi River.

From the Cairo, Arkansas and Texas Railroad to the "Sunk Lands" there are farms scattered along the river, the most densely populated settlement being from Chalk Bluff to Brown's Ferry.

Cotton, the principal product of the soil, which produces three-fourths of a bale to the acre, is shipped to market by way of the narrow-gauge railroad running from Malden to New Madrid. The distance from Brown's Ferry to Maiden is 15 miles. Quite a great deal of cotton is raised, each farmer having from 5 to 15 acres in cultivation. Although large quantities of the staple are produced, yet I deem it insufficient to warrant the expenditure of the great amount of money necessary, either to cut and dredge a channel through portions of the "Sunk Lands" to river communication below, or to remove the "Big Raft" and the other numerous and formidable obstructions in the river from the "Sunk Lands" to the Cairo, Arkansas and Texas Railroad.

The river from Greenville to the Cairo, Arkansas and Texas Railroad has five recognized ferries, which are in good condition, and apparently do considerable business. Quite a number of farms are on the banks of the river. Corn, oats, and wheat are the products, which at present are of little value otherwise than for home consumption.

If cheap transportation is afforded the country along this part of the Saint Francis River, it will be able to put its fine timber, cereals, stock, and baled hay in the market.

In the vicinity of Indian Ford there is considerable iron ore, reputed to be of a very good quality, which would also find its way to the market. Reliable statistics could not be obtained, so have been compelled to give the general indications.

A small steamboat, which intends carrying lumber and the products of the country to the railroad, has just been completed at Cutler's Mill.

Should it be deemed advisable to improve the reach of river from Greenville to the Cairo, Arkansas and Texas Railroad, I have no doubt but that that country would be greatly benefited by increased population, and the country at large by the resources of the region. I therefore append an estimate of the cost of improvement for this part of the Saint Francis River for low-water navigation.

ESTIMATE.

Building low-water dams, 3,000 cubic yards, at $3		$9,000 00
Flat-boat, with necessary tools		3,000 00
Expenses of boat for one month, as follows:		
Engineer in charge	$150 00	
Mate	75 00	
Cook	60 00	
Fifteen men, at $40 per month	600 00	
Subsistence, 18 men, at $15 per month	270 00	
Total	1,155 00	
Removing snags, &c., 8 months, at $1,155		9,240 00
Contingencies, 15 per cent		3,186 00
Total cost of improvement from Greenville, Mo., to Cairo, Arkansas and Texas Railroad		24,426 00

This improvement should be made during the summer and fall months, when the stage of the water is low.

Very respectfully,

J. B. ROHRER,
Assistant Engineer.

Maj. W. W. H. BENYAURD,
United States Engineers.

EXAMINATION OF OBION RIVER, TENNESSEE.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 20, 1880.

GENERAL: I have the honor to submit herewith a report upon the examination of Obion River, Tennessee, in accordance with act of Congress approved June 14, 1880.

The river is formed by the junction of the North, South, Rutherford, Harris, and Big Davidson forks, near the northwestern part of the State. It flows through Obion and Dyer counties, and empties into the Mississippi River at Hall's Point. Four miles above its mouth it receives the waters of the Forked Deer and tributaries.

The examination was made by Mr. Zeph. Harrison, assistant engineer, and extended from Crockett, the point of crossing of the Mobile and Ohio Railroad, to the junction with the Mississippi River, a distance estimated at 190 miles.

The upper section of the stream is crossed by the following railroads, viz: New Orleans, Saint Louis and Chicago Railroad, Nashville and Chattanooga, Mobile and Ohio, and Memphis and Paducah, which do all the freight business for the section of country through which they pass. All of the bridge crossings of the stream are built upon pile foundations, and, being without draw spans, cut off all water communication between the upper and lower portions of the river. The lower of the bridges, that of the Paducah road, is 115 miles from the mouth, and it is only necessary to consider this lower section of the river in the contemplated improvement.

Mr. Harrison states that the examination showed that although the river is somewhat narrow, its banks are high and non-caving for the greater part of its length, and that there is a good channel throughout the whole length of the river, the least depth in the lowest stage being 4 feet, except on the shoals occasioned by imbedded logs, the removal of which would cause the shoals to disappear.

The obstructions to navigation are snags, logs, leaning timber, &c., the removal of which would constitute the principal work to be carried on in order to make the river navigable for the class of boats that navigate the stream. These boats are of the same character as those on the Forked Deer, the narrowness of the river and the shortness of many of the bends not allowing any but boats of small dimensions to run on the river except in the lower part.

Mr. Harrison's estimate for removing the obstructions as above-mentioned is $28,809.

The Obion runs through a fine and heavily timbered country, and the principal article of export is lumber, of which vast quantities are annually shipped both in the log and as sawed lumber. Numerous sawmills line the stream, and they are kept in constant operation. The estimated value of the production is given by Mr. Harrison as upwards of $2,800,000. The railroads control all the trade of the upper section of the river above Obion Station, the crossing of the Paducah Railroad; below this point the only outlet to the commerce is by steamboat.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. ZEPH. HARRISON, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn.

MAJOR: Having received your instructions of October 8, 1880, to make an examination of the Obion River, Tennessee, with a view to its improvement, I respectfully make the following report:

I left Memphis with one man, a large skiff, and a complete camp outfit. We reached

Crockett, on the Mobile and Ohio Railroad, the next day. Near this place, which is in the northwestern corner of this State, the Obion River is formed by the junction of the North, South, Rutherford, Harris, and Big Davidson forks. It has a southwesterly flow through Obion and Dyer counties and empties into old channel of the Mississippi River, 4 miles by water from the main river; this stretch has since received the name of Obion also, as no water flows through it from the Mississippi excepting in high stages. The length of the river is 225 miles pilot's measurement.

Having heard at the outstart of the numerous obstructions in the river, I engaged two more men and started my examination at the crossing of the Mobile and Ohio Railroad, as there are only 10 miles of deep water above, and the railroad takes all the freight from that section. The river was very low, not over 1 foot above extreme low-water. We found considerable drift, and in many places were compelled to drag the boat around, sometimes over banks 5 feet high. The upper river has a width of about 150 feet, surface of water; the banks are from 5 to 15 feet high and 180 feet apart. The least depth of water is just below Kimberlin's Mill, 180 miles from the mouth, being 18 inches; the greatest depth is 60 feet and 85 miles from the mouth, while the average is about 7 feet at lowest stages. Midway between the last-mentioned points and near Obion Station, on the Memphis and Paducah Railroad, the river divides into six different cut-offs, the largest of which is nearly as wide as the river, which is very narrow here and completely filled with drift. It has the appearance of an immense wood-pile 30 feet high and 1,500 feet long. This whole region, embracing nearly 2 miles of river distance, is one set of rafts, but advantage can be taken of a certain cut-off, which is nearly free from drift and will shorten the distance by water considerably. This cut-off has an average breadth of 60 feet, a minimum depth of 3 feet, and is about a quarter of a mile long. It began raining very hard while we were at this place, and the river commenced rising, but we kept ahead of the main rise until we reached the mouth. The numerous booms at the different saw-mills along the banks gave us considerable trouble as well as the rafts of saw-logs we encountered, which often detain the steamers for hours at a time.

CHARACTER OF ADJACENT COUNTRY.

The valley of the Obion River varies in width from 4 to 10 miles. That part which is subject to frequent overflows is very poor and unproductive, but there is not much land of this class, as shown by the high banks. The rest is extremely rich, and is spoken of very highly. "Killebrew's Resources" and "Safford's Geology of Tennessee" place this section among the very first in the State, both as to cotton-production and timber. Some 3 or 4 miles from the river there is a kind of soil especially adapted to the growth of tobacco. This article is raised in large quantities, and has a name for its fineness and silkiness. There seems to be a variety of soils along the Obion River, each of which is a favorite with the farmer for the culture of some especial article. Drought never affects this country as it does the majority of places; this is probably owing to the immense forests, which are unequalled in this or any of the neighboring States. The undergrowth is principally cane and paw-paw, while the larger timber consists of poplar, oak, gum, walnut, beech, sugar-tree, and hickory. Some of these trees are of enormous size and height, fairly rivaling the mammoth trees of California.

At the exposition held in Nashville in 1872 was exhibited a cut 12 inches long taken from a sassafras tree grown on this river which measured inside the bark, which was 2 inches thick, 4 feet and 8 inches in diameter. This cut, taken from the tree at a distance of 12 feet from the ground, was perfectly solid. Here also are found mammoth poplar, and even oak, trees reaching the enormous height of 150 feet and measuring 5 and 8 feet in diameter. But independent of these extraordinary trees, the timber of the country is wonderfully large and stands exceedingly thick upon the ground. Numerous saw-mills line the river bank and are constantly running. Nearly all the capital engaged in this business is from Cincinnati or Chicago, and I heard of not less than twenty mills in prospectus. Fine herds of cattle of the improved kinds of stock graze among the cane, which appears wherever the forests are not too thick to check its growth.

TRIBUTARIES.

Mill, Richland, Clover Lick, and Reed creeks and Reelfoot Bayou empty into the Obion River, the last mentioned being the outlet for the celebrated Reelfoot Lake. These creeks vary in width from 30 to 90 feet near the mouths and generally have as good a channel up a few miles as the main river. The timber is similar to that last mentioned.

OBSTRUCTIONS TO NAVIGATION, IMPROVEMENTS, AND ESTIMATES.

The ordinary obstructions existing to a greater or less extent on all rivers are found on this stream, viz, snags, drift, embedded logs, overhanging timber, &c. Very few of the farms run down to the bank, consequently overhanging timber is oneof the most serious obstacles, and runs nearly the whole length of the river. This timber, being very large, often falls across the entire width of the river and holds a considerable amount of drift above it. In a number of places logs have become embedded in the bottom, which, in the upper part of the river, is about a foot of sediment over clay. But in many respects the Obion is a very superior river. Although it is somewhat narrow, its banks are high and non-caving, and there is a deep channel for 235 consecutive miles, the least depth in the lowest stage being 4 feet, excepting the shoals occasioned by embedded logs. It is rather tortuous in places, but the steamers now running in the river have little trouble making the bends.

In the lower river sand appears, but the narrowness of the river keeps it from forming into bars. We counted 4,150 snags, 720 sawyers, 71 drift piles, 1 raft, 5,600 trees about to obstruct the river, and 21 places where there are embedded logs; but the number of snags and sawyers was probably small on account of the stage of water having risen from 2 to 3 feet above low-water. "Tigertail" is the name given to a canal dug by the State some years ago from Forked Deer into Obion River. From this canal to the mouth of the river, 4 miles, it is very narrow and one succession of drift and snags. It is from 6 to 10 feet deep and has a current of 5 miles an hour. It is the most important part of the river, however, as it is the outlet of the Forked Deer trade. Besides this there is very little work needed in Old Channel. The Memphis and Paducah Railroad has a bridge across the river at Obion Station. It is 24 feet above low-water in the clear and its spans are only 12 feet. This should be changed to a draw-bridge.

For the improvement of this river, a flat-boat could be built and arranged with shears to pull snags. The monthly expenditure of running this boat would be:

Supervising engineer	$150 00
Mate	75 00
Cook and helper	60 00
Ten laborers, at $30	300 00
Subsistence, 14 men, at $15	210 00
Total	795 00

The banks could be cleared of timber to a width of 30 feet on either side; this I estimated at a cost of $112 a mile, and the distance to be 160 miles.

ESTIMATE OF COST OF PROPOSED IMPROVEMENT OF OBION RIVER FROM CROCKETT TO THE MOUTH, 225 MILES, SO AS TO MAKE IT NAVIGABLE FOR EIGHT MONTHS IN THE YEAR.

Flat-boat for removing snags, drift, &c.	$2,000 00
Outfit of tools, rope, &c., $400; 25 per cent. for repairs, $100	500 00
Removing snags, drift, &c., five months' work, at $795; add one month for moving	4,770 00
Clearing the banks of timber, 60 feet wide, for a distance of 160 miles, at $112 per mile	17,920 00
Flat-boat for quarters, &c.	1,000 00
Contingencies, 10 per cent	2,619 00
Total estimated cost of improvement	28 809 00

COMMERCIAL STATISTICS.

There are four steamers which ply in the lower river, viz, the Alph Stevens, Mark Twain, Obion, and Dyersburg, the total tonnage of which is nearly 2,000; six keel-boats also are engaged. These boats seldom ascend the river very high, on account of the snags, but manage very well in high stages of water, when they are able to go through the different cut-offs and escape the drift which is generally found in the old channels.

The principal article of export is lumber, of which vast quantities are annually shipped, both in the log and sawed.

The Memphis and Paducah Railroad is making an attempt at carrying the exports of the upper river country, but, being an unfinished road, it is unable to carry goods without an unreasonable tariff. The lumbermen were constantly complaining, while

I was in that vicinity, of high rates and no cars. Where twelve cars a day were required for their business alone, only three would be furnished and sometimes none. Why the railroad authorities failed to see their own interests better than this, I could not see, unless their limited capital could not keep pace with the requirements of trade. In addition, it might be said that the principal lumber comes from near the river bank, and the expense of hauling is another item which deducts from the profits of the business, consequently discouraging it to that extent. Below is a list of the prominent points on the river, with the shipments both by rail and river.

Names.	Distance from mouth.	Cotton.	Seed.	Corn.	Wheat.	Tobacco.	Cattle.	Hogs.	Shingles.	Lumber.	Staves.	Remarks.
	Miles.	*Bales.*	*Tons.*	*Bush.*	*Bush.*	*Hhds.*	*No*	*No.*	*Bdls.*	*Feet.*	*No.*	
Crockett	225	1,000	300	1,500	1,200	10	200	300	1,200	100,000	5,000	By rail.
Kimberlin's Mill	180	90	.....	1,000	800	.....	100	200	.....	500,000	1,000	Do.
Obion Station	130	1,525	500	2,000	65,000	15	1,200	2,700	1,000	11,950,000	5,000	Do.
Sharp's Landing	100	800	300	.....	.....	.....	.....	.....	.....	.....	5,000	By river.
Troy	80	800	300	1,000	20,000	14	600	1,500	80	1,500,000	15,000	Do.
Fay's Mill	65	700	275	1,000	500	12	200	1,000	100	1,300,000	10,000	Do.
Plank Road Ferry	45	500	175	150	.....	.....	100	200	.....	1,000,000	15,000	Do.
Ferguson Ferry	25	700	275	50	.....	.....	100	400	.....	900,000	40,000	Do.
Old Channel	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Do.
Tigertail	4	5,000	1,700	40,000	45,000	400	.....	....	.....	5,000,000	.....	Do.

The blanks are where I was unable to arrive at any correct estimate. The value of the imports and exports in the valley of the Obion River amounts to $2,800,000.

Very respectfully submitted.

ZEPH. HARRISON,
Assistant Engineer.

Maj. W. H. H. BENYAURD,
Corps of Engineers, U. S. A.,

EXAMINATION OF SOUTH FORKED DEER RIVER, TENNESSEE.

UNITED STATES ENGINEER OFFICE;
Memphis, December 16, 1880.

GENERAL: I have the honor to present the following report of an examination of the South Forked Deer River, Tennessee, made in accordance with act of Congress approved June 14, 1880:

The river heads in McNairy and Henderson counties, and, flowing in a general southwesterly direction, joins the main Forked Deer River about 8 miles below Dyersburg. It flows through Madison County, forms the boundary between Haywood and Lauderdale and Crockett and Dyer counties. It is the most important of all the branches that form the main stream. The examination was made by Mr. Zeph Harrison, assistant engineer, whose report is annexed, and extended from Jackson, Tenn., which was formerly the head of navigation, to its junction with the main Forked Deer.

The commerce of the country through which the stream passes is very considerable, as will be seen by reference to the statistics in Mr. Harrison's report. Before the introduction of the railroads all this commerce was carried upon the stream, and the crops had an outlet to the Mississippi River. Of late years, however, the Mobile and Ohio, the Mississippi Central, the Louisville and Nashville, and the narrow-gauge railroad from Brownsville, Tenn., northward, have been constructed, and the products have been diverted in other directions. All these railroads have bridges across the river, without draw-spans for the passage of boats, and consequently they act as complete obstructions to navigation.

The Memphis and Paducah Railroad is now in course of construction, and will cross the river near Dyersburg. It is not known what character of bridge will be constructed, but judging from their bridges over other streams, it will be without a draw. If so built, it will block the river completely above that point.

As the railroad bridges are complete obstructions, as at present constructed, I do not deem it necessary to consider the upper section of the river above the Brownsville narrow-gauge road. From the latter point down the people are dependent upon the river for the transportation of their crops and the return of plantation and other supplies. The natural obstructions are snags, logs, and leaning timber, and their removal would constitute the principal improvement to be carried on to render the stream navigable at a time when there would be sufficient water in the river for navigation purposes. The total length of stream needing this work is about 100 miles, and the estimated cost of removing the obstructions is $19,250.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. ZEPH. HARRISON, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 16, 1880.

MAJOR: I respectfully make the following report upon the recent examination of the South Fork of the Forked Deer River, Tennessee, made under your direction.

The South Fork takes its rise in McNairy County, not far from Jackson (Madison County). It has a general southwesterly flow. It traverses the central part of Madison County, and then divides the counties of Haywood and Lauderdale from those of Crockett and Dyer, flowing into the Forked Deer 8 miles below Dyersburg. The length of the river is about 250 miles, 195 of which were examined; these distances were estimated by raftsmen on the river. Having understood that Jackson, on the Mobile and Ohio Railroad, was the old head of navigation, I made it the initial point of my examination. From this place I gradually descended the river in a skiff, with a party of three men, taking notes of the sinuosities of the stream, soundings, number and position of snags, accumulations of drift, &c. We were constantly troubled by foul weather, never having two fair days in succession. The drift also frequently compelled us to unload and carry the boat, with our effects, to a point below the obstruction. The stage of water varied at times from 4 to 6 feet above low-water.

CHARACTER OF ADJACENT COUNTRY.

The valley of the South Fork is very extensive, reaching eastwardly to within 10 miles of the Tennessee River. It varies in width from 1 to 8 miles. The "Mississippi Bluff" borders the entire valley on either side. The soils on this bluff are constitutionally different from those in the valley. The first is composed of a fine calcareous, silicious earth, often presenting an ashen aspect as to color and consistence, but sometimes of a reddish cast, occasionally black, and sometimes orange; these are among the most fertile in the State. Tobacco, cotton, corn, wheat, oats, clover, and the grasses grow luxuriantly upon them, while the native growth is of marvelous exuberance. The second is the well-known "alluvial," more or less common in all creek and river valleys; this is good corn land, although it is generally in cotton. About two-thirds of the high lands and one-tenth of the bottoms are in a state of cultivation; the balance is covered with a dense growth of timber. White oak, ash, poplar, chestnut, and hickory predominate; but beech, elm, cypress, cottonwood, and other kinds are found here.

Along the escarpment of the bluff I noticed some very peculiar trenches about 10 feet wide, 5 feet deep, and running back perpendicular to the face of the bluff. I ac-

counted for these by the supposition that they had been formed by the earthquakes of 1811–'12; they were probably very deep at the time, but have been filling in gradually and will eventually disappear. I also saw croppings of lignite near these places and one small mine.

TRIBUTARIES.

Little Middle Fork, Jones', Johnson's, Cub, Turkey, North Branch, Nixon's, and Otter creeks all flow into the South Fork. They vary in width at the junctions from 30 to 100 feet and in depth from 5 to 10 feet. They are principally used for rafting. Turkey Creek has some fine chalybeate springs along its banks. The finest timber is found on these smaller streams. This is perhaps due to the main river overflowing. Cypress is the only exception, this confining itself to the swamps and overflowed land.

OBSTRUCTIONS TO NAVIGATION, IMPROVEMENTS AND ESTIMATES.

The upper river is very sinuous, the bends being short and numerous. This part of the river is crossed by the Louisville and Nashville, the Mobile and Ohio, and the Mississippi Central railroads, which drain the country of its surplus products. Three more roads are being projected in the same vicinity, and it is thought will be built. The river here is also completely blocked up by drift in several places; therefore it does not seem advisable to improve this part. I have, however, estimated upon it. From Jackson to Sharon, 81 miles, the work of pulling the snags, removing a brush dam (mill site), and clearing the banks would cost at least $45,000. As the railroads here are able to do the whole business, and as there is competition enough already to reduce rates, I see no reason for any change. Below Sharon, however, the people are dependent on the river or a very long haul over bad roads. This part, from Sharon to the mouth, 114 miles, I have carefully estimated upon. The obstructions consist of snags, drift, and overhanging timber. I counted 3,850 snags, 122 drift-piles, and 7,600 trees about to fall in the water. For pulling the snags and removing the drift a small flat-boat can be built at Chestnut Bluff, where keel-boats are being constantly constructed. This boat should draw about 1 foot of water and have the necessary machinery and rigging for its purpose.

The best time for the work is from July to December, when the water is low.

The banks can be cleared to a width of 30 feet on either side. This would cost about $105 a mile.

ESTIMATE OF COST OF PROPOSED IMPROVEMENT OF SOUTH FORK FROM SHARON TO THE MOUTH, 114 MILES.

Flat-boat for pulling snags and removing drift, outfit, &c	$3,000
Five months in field	5,300
Clearing the banks 60 feet wide, felling the trees and cutting them into 12-foot lengths, 80 miles, at $105	8,400
Flat-boat for quarters	800
Contingencies, 10 per cent	1,750
Total	19,250

This amount judiciously expended would give safe navigation six months in the year.

COMMERCIAL STATISTICS.

Very little trade has been carried on of late years on the South Fork, for the reasons that the river country now has railroad facilities and the river is so full of drift that the larger steamers have refused to run in that trade any longer. Some rafting is still going on during high stages of water, but there is so much danger and expense attending it that the annual decrease is very perceptible. From Chestnut Bluff a few hundred bales of cotton and some seed are taken by the steamer Obion at every rise in the river, but even this has fallen off so that the citizens of this place are building keel-boats, in the absence of steamers, as the only resort for marketing their goods. This mode of transportation in this kind of a stream is so expensive that it will eventually discourage exporting from that section, which embraces about 300 square miles outside of the district accessible to the railroads. As before mentioned, some years ago the head of navigation was at Jackson, which then had about 2,000 inhabitants.

The following is a list of the old steamboat landings, with the average annual ship-

ments before navigation was suspended. In this table are also embodied the distances and the size of the river at or near these stations.

Names.	Distance from mouth.	Low-water.				Cotton.	Seed.	Grain.	Stock.
		Width.		Depth.					
		Greatest.	Least.	Greatest.	Least.				
	Miles.	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Bales.*	*Tons.*	*Bush.*	*Head.*
Jackson*	195	100	50	10	1	12,000	4,000	5,500	10,000
Poplar Corner	159	120	60	20	1	1,000	300	500	50
Smith's Ferry	147	150	50	6	2	500	175	50	.....
Bell's Station†	142	200	50	15	5	1,000	300	100	50
Cherryville	127	175	60	16	4	100	.....	.....	100
Old Brush Dam	124	200	70	8	0	.....	.....	.....	.....
Sharon	117	120	60	10	5	100	.....	.....	.....
Eagle Nest	112	110	50	12	3	100	.....	200	50
Fort Ridge	109	140	60	15	4	225	50	100	.....
Clyce Mill	101	130	70	11	5	350	100	200	.....
Henderson Ferry	92	110	40	6	1	100	.....	50	.....
Elmore Landing	81	120	60	8	1	250	75	150	100
Moore's Landing	73	140	90	8	2	50	.....	100	.....
Buck's Ferry	65	150	80	8	2	50	.....	150	.....
Chestnut Bluff	56	300	100	25	5	3,000	1,000	1,200	1,000
Hall's Log-yard	51	250	90	30	6	.....	.....	.....	.....
Fitshugh Eddy	47	300	100	60	10	.....	.....	.....	500
Faulkner Ferry	36	200	100	40	10	100	.....	100	100
Cowel's Ferry	32	200	110	40	10	75	.....	100	50
Hoosier Mill	28	125	100	20	6	.....	.....	.....	.....
Yellow Bluff	12	175	105	25	3	100	.....	500	800

* Mississippi Central and Mobile and Ohio Railroads.
† Crossing of Louisville and Nashville Railroad.

Memphis is the market for this section, and draws from it considerable cotton and lumber. The people are talking of emigrating unless there be better communication with the neighboring districts, and cheaper as well as safer transport for their productions.

Very respectfully, your obedient servant,

ZEPH. HARRISON,
Assistant Engineer.

Maj. W. H. H. BENYAURD,
Corps of Engineers, U. S. A.

EXAMINATION OF NORTH FORKED DEER RIVER, TENNESSEE.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., December 20, 1880.

GENERAL: I have the honor to submit the following report of an examination of the North Forked Deer River, Tennessee, made in accordance with act of Congress approved June 14, 1880.

While the Forked Deer River proper is formed by the confluence of several streams, known as the South, Middle, and North Forks, the name of North Forked Deer has been given to the North Fork, and its continuation as the main river, after being joined by the other two branches, and as such has been included in the examination made from the initial point to the junction with the Obion, 4 miles from the Mississippi River.

The examination was made by Mr. Zeph. Harrison, assistant engineer, and party, and extended from Collins to the mouth, a distance of 140 miles. An examination of that portion of the stream below Dyersburg, a length of 34 miles, was made in 1873, under the direction of Major Suter, Corps of Engineers, the report upon which will be found in the Report of the Chief of Engineers for 1874, part 1, page 375. No appropriation was, however, made for the improvement.

The North Fork is found by the junction of several smaller streams, near Trenton, a station on the Mobile and Ohio Railroad, in Gibson County. It flows in a general southwesterly course, forming the boundary between Dyer and Lauderdale Counties, and joins the Obion River, about 4 miles above the junction of the latter with the Mississippi River. Its two principal branches are the Middle and South Forks. The latter river I am also required to report upon. The total length of the river is estimated at 250 miles, though it was only considered necessary to examine about 140 miles of it. This is divided into two parts, from Collins to junction with the South Fork, and from thence to the mouth.

In the first stretch, a distance of about 110 miles, the natural obstructions to navigation are snags, logs, and leaning trees. The river has a general width of about 100 feet, and though at various points it presents a general depth of about 5 feet, there are many points where, during low-water, not over 1 foot depth is found. The river is very winding, rendering the navigation (even if clear of obstructions), except by steamers of the very smallest class, a matter of considerable difficulty.

Two railroads are now projected which will cross the upper section of the river. These are the narrow-gauge road from Brownsville, running northward, and the Memphis and Paducah Railroad. The latter has already constructed a bridge across the river at Dyersburg, under authority from the State, and, as built, will be a complete obstruction to navigation above that point, as no arrangement has been made for a draw. At the present time a portion of the north-approach span has been removed, to allow the passage of stave-boats. The gap now existing in the road will undoubtedly be closed up, and that section of the river above the bridge will be completely cut off from all communication with the section below. That part of the river from Dyersburg down, a distance of about 34 miles, will then be the only portion left in a navigable condition.

The lower section of the river, from junction of South Fork to the mouth, a distance of 24 miles, has a general width of about 150 feet, and a depth, at low-water, except on the bars, of about 3 feet. In the lower river the depth on the bars at low-water is less than 1 foot.

The obstructions to navigation, during either high or low water, are snags, logs, and leaning timber, and in low-water the bars and short bends. In this part of the river, as in the upper, only small steamers will be able to navigate, even if the improvement be undertaken.

Mr. Harrison estimates the cost of improving the river as follows:

From Collins to South Fork, 110 miles	$19,952 50
From South Fork to mouth, 24 miles	15,415 75
Total	35,368 25

The products of the country through which the river passes consist of cotton, tobacco, corn, cattle, staves, lumber, &c., the estimated value of which is placed at about $2,000,000.

The report of Mr. Harrison, giving in detail the character of the country, obstructions to navigation, products, and estimate for cost of improvement, is appended.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

REPORT OF MR. ZEPH. HARRISON, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn.

MAJOR: I have the honor to submit the following report upon the recent examination of the North Forked Deer River, Tennessee, made under your direction:

This river is formed by the confluence of several streams near Trenton, on the Mobile and Ohio Railroad, and in the central part of Gibson County. Its general flow is westerly to Dyersburg, then southwesterly, dividing the counties of Dyer and Lauderdale; then westerly again, finally emptying into Obion River 4 miles above its mouth. Eight miles below Dyersburg the South Fork empties into the North Fork, and below this point it is sometimes called the main river, but generally known by the name of the North Forked Deer River to the mouth.

The mouth of the river was formerly at Ashport, on the Mississippi River, but a great amount of drift having floated out of that river into the Obion and thence into the Forked Deer, the State made an appropriation for a canal between this river and the Obion. That part below this canal and down to Ashport is now called "Old" and "Lost" channels, and is never used, being completely blocked up with snags and drift. This canal is commonly called "Tigertail," and has diverted the entire trade from Ashport to Hale's Point, near the mouth of the Obion. The length of the river by the present channel is 250 miles, pilots' estimate.

The examination was conducted in an open skiff, with a party of three men, from the mouth of the river to "Collins'," 140 miles. Careful note was taken of the position and number of all snags, drift-piles, leaning timber, and bars. At the outstart the stage of water was about 1 foot above the dry-season level, and the weather favorable, but it soon changed to heavy rains and colder weather. The river rose 5 feet. This doubtless concealed many of the snags and other obstructions, but I had reliable information from the steamboatmen running on the river. The nature of the river, banks, and obstructions are different in the upper and lower river, consequently I will treat them separately.

COLLINS TO THE MOUTH OF SOUTH FORK.

(110 miles.)

This part of the river is very sinuous, the bends being very sharp and numerous. The river has a varying width of from 75 to 150 feet, averaging about 100. The depth was rather uniform, being generally 5 feet at low-water, but there are places where there is less than a foot of water in the summer. There are also holes occasionally as deep as 35 feet. The meanderings of the stream in the valley, which is from 1 to 3 miles in width, often brings it in contact with the bluffs, forming a bank of over 100 feet on one side and about 5 feet on the other. But the banks are generally 10 feet above low water, and non-caving.

CHARACTER OF ADJACENT COUNTRY.

The escarpment of the plateau or highlands of West Tennessee, to which the general name of the "Mississippi Bluff" has been given, borders the river valley on either side. It is from 100 to 150 feet above the river. Two-thirds of the highlands are probably in a state of cultivation; the balance, together with nearly the whole of the bottom lands, is covered with a dense growth of timber. The soil of the highlands is what is known as "bluff loam," and is said to be the finest producing soil in the State. Cotton, tobacco, corn, and wheat are raised for export, as also cattle and hogs. All the cereals are raised sufficient for home consumption. The stock is of the improved kinds, and seldom need housing during the winter. Their range is among the cane-

brakes in the bottoms. Ash, hickory, black walnut, gum, poplar, chestnut, cypress, and the different varieties of the oak abound here. White-oak is found in unlimited quantities and of large size; paw-paw, hazelnut, and cane form the underbrush.

TRIBUTARIES.

Numerous small streams flow into the upper river, from eitheir side, having their rise in the table-lands beyond. Escarpment, Bluff, and Tennessee creeks are the principal ones, having a width of 40 and depth of 8 feet near the main river. They are all lined with a wealth of dense timber, immense quantities of which are annually taken in rafts to Memphis.

OBSTRUCTIONS TO NAVIGATION, IMPROVEMENTS, AND ESTIMATES.

In the last few years some light work has been done by private enterprise in cutting the worst leaning trees, girdling others, and removing some of the more dangerous snags. The timber was cleared to a width of 100 feet on a narrow neck of land 1 mile below Dyersburg. It was hoped that, the timber being gone, a channel would eventually wash out for itself, but there are no indications as yet of its doing so. It is 550 feet across, and over a mile around; in this bend a boat is required to make five different stoppages before getting through.

Just above Dyersburg the Memphis and Paducah Railroad crosses the river. The north approach to the bridge was cut through last season to allow stave-boats to pass. Although this part of the road was finished, or nearly so, as I understand, it was never traveled, the termini of the gap being Trimble on the north and Covington on the south. This bridge, not being used, should be wholly removed, or changed to a draw. I counted on this part of the river, viz, from Collins to South Fork, 1,525 snags, 62 drift-piles, and 2,800 trees about to fall into the stream. The improvement would embrace the pulling of the snags, removing the drift, and clearing the banks. For removing the obstructions in the river a flat-boat can be built, with shears for pulling snags. There is every facility for building such a boat at Dyersburg, where the steamer Dyersburg, a screw-propeller, was built a few years ago. This boat can be operated with advantage for about five months during the low-water season, from June to December. The timber can be cleared from the banks to a width of 30 feet on either side, and 100 feet on the points in sharp bends; this I estimate at $115 a mile and for 70 miles.

ESTIMATE OF COST OF PROPOSED IMPROVEMENT OF THE NORTH FORK FROM COLLINS TO MOUTH OF SOUTH FORK.

Flat-boat with shears for pulling snags and removing drift, outfit, &c	$3,000 00
Five months in field	5,300 00
Clearing the banks, trees cut down and into lengths of 12 feet, 70 miles, at $115	8,050 00
Flat-boat for quarters	1,000 00
Contingencies 15 per cent	2,602 50
Total	19,952 50

FROM SOUTH FORK TO MOUTH OF RIVER.

(Estimated distance, 24 miles.)

This stretch has a varying width of from 125 to 300 feet, generally about 150 feet, and a minimum depth of channel, excepting the bars, of 3 feet. The banks are very high, and, near the canal, constantly changing.

CHARACTER OF ADJACENT COUNTRY.

The above-mentioned bluff borders the river on the southeast; it is 180 feet above low-water in the highest places. On the highlands of this bluff the soil is nearly a foot thick, on a good clay foundation, and is very mellow and fertile. Corn and cotton grow well on this ground, but the best corn-lands are in the bottoms, which lay all along the right and part of the left bank; here the soil is a rich, dark, alluvial loam, from 10 to 20 feet deep, resting also on a clay subsoil. A large proportion of this section is still covered with forests of immense timber, which will not be cleared off for many years. There is a belt, however, toward the Mississippi, which is now in a state of cultivation.

Croppings of lignite, 4 and 5 feet thick, were seen in the bluffs. The timber is of the same kinds as that on the upper river, but much larger and finer. I saw numberless logs lying on the banks from 3 to 6 feet thick, and often 40 feet long. The white-oak timber here is especially adapted to the manufacture of staves, immense numbers of which are annually shipped in stave-boats to New Orleans. These boats hold from 40,000 to 60,000, and never return. There are no saw-mills on this part of the river, all the timber being shipped in the log.

TRIBUTARIES.

Mud Creek and Rick's Slough empty into the river from the north, and Oak and Chestnut creeks from the south; these are the only tributaries of any size, and are each about 50 feet wide at the mouth. They also have a good depth of water for rafting purposes, considerable timber being taken from them every year.

OBSTRUCTIONS TO NAVIGATION, ESTIMATES, AND IMPROVEMENTS.

The obstructions are principally snags, drift, leaning timber, and sand bars. I counted seven hundred and twenty-one snags, five drift piles, and six sand bars. These sand-bars are, perhaps, the worst obstacles in the river. The two largest ones are formed by deposits from the Mississippi backwater, and have made and washed away again each successive season for the last forty years. On account of these bars there has to be a rise of at least 3 feet before the smallest of the boats can ascend the river. Low wing-dams constructed of piling would confine the current enough to scour out a channel sufficiently deep to meet the ordinary wants of trade. I have estimated the total length of these dams to be 2,200 feet, and the cost to be $6,000. The boats heavily loaded with cotton are often delayed for some time on these places. The following is a list of these bars:

Names.	Distance from mouth.	Length of bar.	Length of dam required.	River at low-water.	
				Width.	Depth.
	Miles.	*Feet.*	*Feet.*	*Feet.*	*Feet.*
Caney Point	¼	200	600	150	0.5
Smith Chute	¾	300	400	200	0.3
Rock Slough	2	300	400	175	0.4
White Oak Bar	4	200	500	300	0.1
Six Mile Cut-off	18	300	300	200	0.3

There are two large bends in the river—one near the mouth, and the other near South Fork. The former is called "Buggy's Cut-off," as the timber was cleared across the neck and some little earth removed by a man of that name. It is 700 feet across and over a mile around The upper cut-off is only used in times of high-water. The timber is cleared here also to a width of 100 feet, but no excavation made. Here the old channel is over 3 miles, and the cut-off is 1,000 feet. The canal, mentioned above, was not finished to a proper depth, under the supposition that a channel would wash out for itself; but, on the contrary, it has been depositing more than scouring. The only remedy is to confine the channel, as in the case of the bars, by a wing-dam. This I estimated at $2,000.

Near Key Corner there was the wreck of a large keel-boat full of lumber, extending two thirds across the river. As we were returning I saw the steamer Beaver approaching this place, and I presume the *débris* is cleared away, but the boat is probably still there.

The improvement of this part of the river is similar to that of the upper river, with the addition of deepening the channel. The estimate for flatboats need not be repeated, as the field can be extended to the lower river, but a third boat will be required on the work of the dams.

ESTIMATE OF COST OF PROPOSED IMPROVEMENT OF THE RIVER FROM SOUTH FORK TO OBION RIVER, 24 MILES.

Removing snags and drift, three months' work, at $1,060	$3,180 00
Wing-dams	8,000 00
Flat-boat for transferring material	500 00

Clearing the banks, trees cut down and into lengths of 20 feet, 15 miles, at $115	$1,725 00
Contingencies, 15 per cent	2,010 75
Total for this reach	15,415 75
Add the estimate for upper river	19 952 50
Total estimated cost of improvement	35,368 25

Aggregate length of stream to be improved, so as to make it navigable about seven or eight months in the year, 134 miles.

COMMERCIAL STATISTICS.

Over 1,000 square miles of territory, containing a population of over 30,000 people, are entirely dependent on the successful navigation of this river for whatever of trade they have. This is computed at $2,125,000. This section is also placed among the finest agricultural districts in Tennessee. There are four steamers running in this trade, viz:

Names.	Draft, light.	One load cotton.	Destination.	Remarks.
Alph Stevens	3.0	400	Memphis	Stern-wheel.
Dyersburg	2.5	400	Saint Louis	Screw-propeller.
Mark Twain	3.0	300	Memphis	Stern-wheel.
Obion	1.0	250	Hale's Point	Do.

The following is also a list of the landings on the river, with the shipments from each, during the past season:

Names.	Distance from mouth.	Bank.	Cotton.	Seed.	Wheat.	Corn.	Tobacco.	Cattle.	Hogs.	Remarks.
	Miles.		*Bales.*	*Tons.*	*Bush.*	*Bush.*	*Hhds.*	*Head.*	*Head.*	
White Oak Stump	10	R.	50	.....	.....	200	.....	25	50	
Key Corner	12	L.	5,150	1,800	500	2,000	.....	250	500	$100,000 up freight.
Richwood's	16	R.	500	150	.....	1,000	.....	300	300	
Tower's	22	R.	300	100	100	1,600	5	200	175	
Smith's	23	R.	200	50	100	2,000	1	150	200	
Carter's	25	R.	350	100	.....	.....	.....	50	200	
Bunnel's	26	R.	350	100	.....	.....	.....	100	250	
Jordan's	27	R.	.....	.....	1,200	.....	.....	50	300	
Christie's	30	L.	105	50	.....	.....	.....	200	800	
Dyersburg	32	R.	8,000	4,000	60,000	10,000	500	2,000	1,800	$200,000 up freight.
Walker's Gin	120	L.	400	100	1,000	500	10	...	.....	
Eaton	134	L.	2,000	700	15,000	8,000	200	500	900	

Besides the above, it is estimated that 10,000,000 feet of lumber are sawed.

It is claimed by many merchants and farmers that this trade will be fully doubled when they have uninterrupted navigation during the shipping season. The tariff on a bale of cotton to Memphis from this vicinity is $3, which, with the long-continued depression in the price of cotton, has operated against any full production. But with the expectation of the removal of these causes, it is supposed that the acreage of cotton will be vastly increased.

Dyersburg and Eaton are the only towns on or near the river; the first had a population of about 4,000 and the latter of nearly 800; both are enterprising and will receive a great stimulus if the above improvements are made.

Very respectfully submitted,

ZEPH. HARRISON,
Assistant Engineer.

Maj. W. H. H. BENYAURD,
Corps of Engineers, U. S. A.

EXAMINATION OF "THE BAY," A TRIBUTARY OF SAINT FRANCIS RIVER, ARKANSAS.

UNITED STATES ENGINEER OFFICE,
Memphis, Tenn., January 10, 1881.

GENERAL: I have the honor to submit the following report upon the examination of "The Bay," a tributary of the Saint Francis River, Arkansas, in accordance with the provisions of the act of Congress approved June 14, 1880.

The location of "The Bay" is between Crowley's Ridge and the Saint Francis River. In high-water it connects with the Saint Francis in the Sunk Lands, near Lester Landing, Craighead County, and flows in a southerly direction, through Poinsett, and empties into the Saint Francis near Wittsburg, in Cross County. In low-water there is no connection with the lakes at the upper end, and the volume of water is due entirely to the drainage of Crowley's Ridge.

The examination was made by Mr. J. B. Rohrer, assistant engineer, upon the completion of the examination of the Saint Francis River from Greenville down. The party would have entered the stream at some point on its higher section, had there been any certainty of finding a channel through the swamps. As it was, they were compelled to start in at the mouth and ascend as high as the stage of water then existing would permit.

The bay at its junction with the Saint Francis is about 350 feet wide, gradually narrowing as we ascend the stream, until it finally becomes lost in the swamps. Though the whole country between Crowley's Ridge and the Saint Francis overflows at high-water, the bar, some 10 miles above its mouth, affords at low-water scarcely even 5 inches. At a point some 12 miles above the mouth, the river narrows to about 75 feet, with a general depth of about 6½ feet, but it is obstructed in many places in this stretch by snags, logs, leaning timber, &c.

Through the next 8 miles we find the stream with a width between banks varying from 50 to 100, and depth varying from 3 to 10 feet, though in many places the channel is filled with tow-head or islands, and also obstructed by snags, logs, &c. From this point up, the channel becomes narrow and obstructed in like manner until the water scatters through the timber and no well-defined channel can be found.

To the lower 30 miles of the stream the name of The Bayou has been applied by the inhabitants about that limit, and through the swamps the stream is known as The Bay proper.

There are no farms along the entire length of the bay; the cultivated lands are back on the river and distant several miles.

Commercially, the stream is of no particular importance, and I can see no particular advantage to be derived by the general government in undertaking any improvement.

Very respectfully, your obedient servant,

W. H. H. BENYAURD,
Major of Engineers.

Brig. Gen. H. G. WRIGHT,
Chief of Engineers, U. S. A.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 63.

INDEBTEDNESS OF FOREIGN GOVERNMENTS.

LETTER

FROM

THE ACTING SECRETARY OF THE TREASURY,

IN REPLY TO

A resolution of the House of Representatives, in relation to the public indebtedness of foreign governments.

JANUARY 29, 1881.—Referred to the Committee on Ways and Means and ordered to be printed.

TREASURY DEPARTMENT, *January* 29, 1881.

SIR: I have the honor to acknowledge the receipt of the resolution of the House of Representatives of the 17th instant, asking that the Secretary of the Treasury communicate any official information in his possession relating to the character and amount of the public indebtedness of foreign governments, the rates of interest, present market value, time of payment, and discount or premiums realized upon original negotiation of the respective bonds and securities of such governments, and, in reply, to transmit herewith copies of certain documents which, it is believed, contain all the information in the possession of this department pertaining to the matters in question.

Respectfully,

H. F. FRENCH,
Acting Secretary.

Hon. SAMUEL J. RANDALL,
Speaker House of Representatives.

GREAT BRITAIN.

FOREIGN OFFICE, *June* 8, 1880.

SIR: In reply to Mr. Hopkins's note of the 25th of February last, relative to certain questions asked by the United States Government, respecting the financial condition of Great Britain, I have the honor to inclose a memorandum of information on this subject, which has been supplied by Her Majesty's treasurer, together with the various documents mentioned therein.

I trust that the papers will furnish all the details desired by the United States Government.

I have the honor to be, &c.,

GRANVILLE.

To JAMES RUSSELL LOWELL, Esq.,
&c., &c., &c.

MEMORANDUM.

* * * * * * *

VI. See Tables B and C, of which B gives the particulars required (so far as can conveniently be done) for the funded, and C for the unfunded debt, as they stood respectively on the 31st of March last.

The national debt of the United Kingdom has been incurred at different times, ranging over a period of nearly two hundred years. It would be a work of much labor to state the sums realized and the liability incurred upon the different loans raised during that time, but the board of treasury would be happy to afford any information in their power, as to specific loans or as to modern loans. As a rule, Her Majesty's government do not borrow upon bond, except for small amounts and limited periods, and such bonds are usually issued at par.

B.—*Condensed summary of the state of the public funded debt of the United Kingdom on the* 31*st March*, 1880.

Description of capital.	Capital.	Interest.	Annual charge.	When redeemable.
	£ s. d.		£ s. d.	
New annuities and exchequer bonds	4,168,504 11 7	2½ per cent.	104,212 12 3	
Debts due to banks of England and Ireland	13,645,869 4 8	3 per cent.	21,182,463 4 11	
Consolidated, reduced, and new annuities	692,436,239 1 2			
New annuities	225,746 6 4	3½ per cent.	7,901 2 5	
Annuities for terms of years			4,712,381 7 3	1885.
Red Sea and India Telegraph annuity			36,000 0 0	Aug. 4, 1908.
Sinking fund annuity on new 2½ per cents			6,906 14 7	July 5, 1894.
Annuities for terms of years per 10 George IV, c. 24, and 3 William IV, c. 14			29,107 12 6	Various dates.
Life annuities			946,549 2 8	
Exchequer tontine annuities			14,000 0 0	
Management			221,992 18 6	
	710,476,359 3 9		27,261,514 15 1	

C.—*Statement of the unfunded debt on March* 31, 1880. (*Prepared for the purpose of answering certain questions of the American Government.*)

Character of obligation.	Amount of obligation.	Date of maturity.	Rate of interest.	When and at what rate issued.	Present market value on March 31, 1880, exclusive of accrued dividend.
Exchequer bonds	£3,200,000	Various dates during 1880.	2½ per cent.	Issued at par on various dates during 1879.	Not on the market.
Do	3,801,100	Payable half yearly up to 1912.	3½ per cent.	Issued at par in 1876	Do.
Do	8,750,000	Various dates from March, 1881, to March, 1883.	3½ per cent.	Issued at par on various dates between March, 1878, and March, 1880.	Do.
Treasury bills	1,481,000	Due at 6 months from date of issue.	£2 5*s* 10*d*	Issued at par	No quotation.
Do	3,950,000	Due at 3 months from date of issue.	£2 3*s*	do	Do.
Exchequer bills	2,535,800	June, 1881	2 per cent.	Issued at par in June, 1876.	4*s*. discount to 1*s*. premium.
Do	100	June, 1866	Not bearing interest.	Issued at par in June, 1861.	
Do	1,471,300	March, 1882	2½ per cent.	£1,382,700 issued at par, and £88,600 issued at prices varying from 7*s*. to 12*s*. premium in March, 1877.	Par to 4*s*. premium.
Do	464,400	do	2½ per cent.	Issued at 1*s*. premium in March, 1878.	Do.

C.—*Statement of the unfunded debt on March* 31, 1880—Continued.

Character of obligation.	Amount of obligation.	Date of maturity.	Rate of interest.	When and at what rate issued.	Present market value on March 31, 1880, exclusive of accrued dividend.
Exchequer bills..	£665, 200	March, 1882	2½ per cent.	Issued at 4*s.* premium in March, 1879.	Par to 4*s.* premium.
Do.....	26, 000	....do	2½ per cent.	Issued at 1*s.* premium in March, 1880.	Do.
Advance by Bank of England in aid of ways and means.	1, 000, 000	.....	2½ per cent.	.....	
Total.....	27, 344, 900				

FRANCE.

MINISTER OF FINANCES—DIRECTION OF THE REGISTERED DEBT—CENTRAL BUREAU.

Questions.—A statement of the debt of the country showing—

1st. The kind and amount of obligations.

Answers. The public debt of France comprises three divisions: 1st, the consolidated debt; 2d, the debt redeemable upon various grounds; and, 3d, the life debt (annuities). Inquiries relating to these debts are considered in the five statements following.

2d. The date of redemption.

This question concerns the redeemable debt only. The dates of repayment, which are scaled from 1880 to 1963, are shown in Statement No. 4 (statement of treasury liabilities, pp. 104 and 105.)

3d. The rate of interest.

See for the consolidated debt Statement No. 2 (table of government loans from 1816), and for the redeemable debt Statement No. 4 (treasury liabilities).

4th. If the interest payments are in arrears, since what time, and the figures and amount of arrears.

As regards the registered debt there are no payments in arrears.

5th. Time and rate of issue. If possible the actual amount realized by the government from its obligations.

See for the consolidated debt Statement No. 2 (table of loans since 1816), and for the redeemable debt Statement No. 4, treasury liabilities. For that part of the debt controlled by the direction of the registered debt, all loans have been realized. (See statement No. 2.)

6th. Actual market value, independent of compound interest.

1st. As regards the consolidated debt, Statement No. 1 furnishes some of the elements of the problem. The rest may be determined by the current rate at the time it is desired to know the actual value of rents. As regards the redeemable debt, see Statement No. 4.

MARCH 18, 1880.

STATEMENT NO. 1.

MINISTER OF FINANCE—DIRECTION OF THE REGISTERED DEBT—CENTRAL BUREAU.

Statement of the consolidated debt January 1, 1880.

Designation of rentes.	Amount of rentes.	Nominal capital.	Number of entries.
	Francs.	*Francs.*	
Rentes, 5 per cent	344, 996, 919	6, 899, 938, 380	2, 319, 365
Rentes, 4½ per cent	37, 442, 436	832, 054, 133	162, 929
Rentes, 4 per cent	446, 096	11, 152, 400	847
Rentes, 3 per cent	363, 039, 704. 29	12, 101, 323, 476	1, 492, 219
Rentes, 3 per cent. redeemable.....	Memoir*.....	.....	.....
Total†.....	745, 925, 155. 29	19, 844, 468, 389	3, 975, 360

* See statement of treasury liabilities, pages 42, 43.

† This sum represents the exact condition of the great register, on the 1st of January, 1880. The sum of 745,957,546 francs, shown on statement No. 4 (treasury liabilities) represents, on the contrary, only the contingent expenses mentioned in the estimate for 1880 (page 75), from theyear 1878.

Table of loans and rentes negotiated from 1816 *to January* 1, 1880.

Laws authorizing the loans.	Dates of negotiations.	Kind of rentes.	Amount of rentes.	Rate of the negotiations.	Proceeds of loans.	Manner of negotiation.
		Pr. ct.	*Francs.*	*Francs.*	*Francs.*	
Law of April 28, 1816, article 117	May 1, 1816; April 1, 1817	5	6,000,000	*57.26	69.763,000.00	At home and abroad.
Law of April 25, 1817	1817 and 1818	5	30,000,000	*57.51	345,065,000.00	French and foreign companies. Negotiations at home.
Laws of May 6 and 15, 1818	May 9, 1818	5	14,925,500	66.50	197,909,040.00	Different subscribers.
Law of May 6, 1818	October 9, 1818	5	12,313,433	67.00	165,000,000.00	Hope & Co., and Baring Bros. & Co.
Laws of May 6 and 15, 1818, and of March 8, 1821.	August 9, 1821	5	9,585,220	85.55	164,003,114.00	Hottinguer & Co., Hope & Co., Bagneault & Co., Delessert & Co. (Adjudication.)
Laws of 1821, 1822, and 1823	July 10, 1823	5	23,114,516	89.55	413,980,981.00	Rothschild Bros. (Adjudication.)
Law of June 19, 1828	January 12, 1830	4	3,134,950	102.07½	80,000,005.00	*Idem.*
Total			99,073,619		1,435,721,140.00	
Law of March 25, 1831	April 19, 1831	5	7,142,858	84.00	120,000,014.00	Different bankers and receivers-general. (Adjudication.)
Law of April 21, 1831	National loan, 1831	5	1,021,945	Par	20,438,900.00	Different subscribers.
Law of 1831 and April 21, 1832	August 8, 1832	5	7,614,213	98.50	150,000,000.00	Rothschild, Davilliers & Hottinguer. (Adjudication.)
Law of June 25, 1841	October 18, 1841	3	5,730,659	78.52½	150,000,000.00	Rothschild Bros., Hottinguer, Boudon Saint-Didier, and receivers-general. (Adjudication.)
Do	December 9, 1844	3	7,079,646	84.75	200,000,000.00	Rothschild Bros. (Adjudication.)
Law of August 8, 1847	November 10, 1847	3	†2,569,413	75.25	64,449,443.00	*Idem.*
Total			31,158,734		704,888,357.00	
Laws of March 31, 1837, and June 26, 1847	Savings-bank funds	4	8,092,647	Par	202,316,175.00	Account current of savings banks.
Decree of March 9, 1848	National loan, 1848	5	1,309,104	do	26,182,213.00	Different subscribers. (Account of 1850, page 454.)
Decrees of July 7, August 9, and November 21, 1848.	Compensation to the subscribers of the national loan.	5	519,283	(‡)		
Decree of July 24, 1848	July 25, 1848	5	13,107,000	75.25	197,260,350.00	Rentes attributed to holders of certificates of the loan of 1847.
Total			14,935,387		223,442,563.00	
Law of March 11, 1854	March, 1854	4½	4,550,640	92.50	93,540,933.00	Public subscription.
		3	7,159,590	65.25	155,721,082.50	
Law of December 31, 1854	January, 1855	4½	8,052,120	92.00	164,621,120.00	
		3	15,857,530	65.25	344,901,277.50	
Law of July 11, 1855	July, 1855	4½	4,389,760	92.25	89,990,080.00	
		3	31,699,740	65.25	689,469,345.00	
Law of May 2, 1859	May, 1859	4½	573,710	90.00	11,474,200.00	
		3	25,199,660	60.50	508,193,143.33	

Law of 1855 and 1857	1857, 1858, 1859, 1860, and 1861	3	7, 942, 315	§69. 10	182, 947, 676. 00	Consolidation of the funds of the army endowment.
Law of June 9, 1857	December 31, 1859	3	4, 000, 000	75. 00	100, 000, 000. 00	Treaty with the Bank of France.
Law of February 12, 1862	1862; conversion of thirty-year obligations.	3	12, 092, 520	‖66. 49	268, 000, 000. 00	Approximate result of various rates of issue of obligations. (Page 434 of the account of 1862.) (443*f*. 25*c*. average for 604,626 obligations.)
Law of December 30, 1863	January, 1864	3	14, 249, 339	66. 30	314, 910, 391. 90	Public subscription.
Law of August 1, 1868	August, 1868	3	19, 514, 315	69. 25	450, 456, 720. 32	*Idem*.
Law of August 2, 1868	1869	3	4, 000, 000	Par		Conversion of Mexican bonds.
Law of August 12, 1870	1870	3	39, 830, 306	60. 60	804, 572, 181. 20	Public subscription.
Total			199, 111, 545		4, 178, 798, 150. 75	
Law of June 21, 1871	1871	5	138, 975, 295	82. 50	2, 293, 092, 367. 50	Public subscription.
Law of July 15, 1872	1872	5	207, 026, 310	84. 50	3, 498, 744, 639. 00	Do.
Total			346, 001, 605		5, 791, 837, 006. 50	

* Average price.
‡ Recalled by the compensation at 71.60 francs.
† Part realized by the loan of 250,000,000 francs authorized in 1847.
§ Various rates, average.
‖ Average.

STATEMENT No. 3.

MINISTER OF FINANCES—DIRECTION OF THE REGISTERED DEBT—CENTRAL BUREAU.

(Debt redeemable on various grounds.)

Statement of specie securities, January 1, 1880.

	Francs.
Amount of securities	315,857,745 97
Representing at 3 per cent. an annual interest of	9,475,732 37

EXTRACT FROM STATEMENT No. 4.

Nature of the expenses.

	Balance to be paid from January 1, 1880, to the end of the operation on the engagements contracted.	
	Before September 4, 1870.	After September 4, 1870.
	Francs.	*Francs.*
ARTICLE 1. Public debt; principal to be reimbursed, of different titles:		
3 per cent. consols to be paid off by annuities	.....	1,351,594,140 00
Annuities for the repurchase of canals	36,534,531 33	.....
Interest and amortization of the thirty years' obligations	21,478,514 60	.....
Annuities (conversion of the "Morgan" loan)	.....	605,500,000 00
Reimbursement of the treasury notes issued for the liquidation account	.....	1,124,300,000 00
Annuity to the company of the "eastern" railroads	.....	1,537,500,000 00
Annuities to the (States) provinces, cities, and counties for the reimbursement of part of the war contributions	.....	334,005,750 00
Annuities for the repairing of damages caused by the military engineer department	.....	37,774,500 00
Annuities to the railroad companies	1,868,909,888 44	31,027,819 90
Interest and amortization of the loan contracted by the Government of Sardinia for the amelioration of the thermal establishment of Aix	532,800 00	.....
Treasury notes to issue for labors at railroads, canals, and rivers	.....	126,784,000 00
	1,927,455,734 37	*5,148,486,209 90
ART. 2. Interior department: Subvention to facilitate the completion of ordinary country roads and highways	17,250,000 00	.....
ART. 3. General civil government of Algeria: Subvention to the company in charge of the mails from Oran to Tangiers	.....	24,000 00
ART. 4. War department: Subvention to the company in charge of the transports between France and Algeria and on the Algerian shores	455,000 00	.....
ART. 5. Department of public works:		
Subvention payable in annuities to the railroad companies	146,307,533 68	404,896,101 09
Labor in reclaiming swamp lands, draining, general care, and irrigation. Subventions	2,305,166 00	1,753,332 66
Subventions to the railroad companies	.....	28,188,452 00
Annuities for the guarantee of interests incident to the exercises of 1871 and 1872	.....	192,107,996 00
	148,612,699 68	†626,945,881 75
ART. 6. Department of the post and telegraphs. Expenses of the administration: Subventions to the companies of packet-ships	55,798,451 50	111,938,694 35
ART. 7. Finance department; reimbursements and repayments: Reimbursement to the province of the Oise	.....	320,000 00
Grand total	2,149,571,885 55	‡5,887,714,786 00
	8,037,286,671 55	

* Includes 1,381,766,946 francs to issue.
† Includes 416,028,041.69 francs to issue.
‡ Includes a total of 1,797,794,987.69 francs to issue.

STATEMENT No. 5.

MINISTER OF FINANCES—DIRECTION OF THE REGISTERED DEBT—CENTRAL BUREAU.

Statement of the annuity debt, January 1, 1880.

Designation.	Sums.	Number.
	Francs.	
Life rents, former	101, 731 00	54
Life rents, old age	11, 964, 888 00	104, 356
Total rents	12, 066, 619 00	104, 410
Pensions:		
Grand functionaries	182, 000 00	19
Peerage and old senate	70, 000 00	6
Civil (1790)	1, 423, 372 89	1, 708
National	278, 225 00	622
Military	67, 045, 643 97	96, 763
Ecclesiastics	28, 132 46	54
Dispossessed donors	636, 665 00	1, 516
Civil (1853)	45, 694, 110 62	67, 354
And life indemnities for employés of the old civil list, and of the domain of King Louis Philippe	165, 246 00	556
Old endowments of Mont du Milan	267, 550 00	337
Total for pensions	115, 790, 945 94	168, 945
Grand total	*127, 857, 564 94	273, 355

*This sum represents the amount of the life debt (annuities) January 1, 1880. The sum of 132,973,619 francs shown on statement No. 4 (treasury liabilities) represents, on the contrary, only the contingent expenses set forth in the estimate of 1880 (page 75) from the year 1878.

GERMANY.

FOREIGN OFFICE, *Berlin, May* 5, 1880.

The undersigned has the honor to forward to Mr. Andrew D. White, envoy extraordinary and minister plenipotentiary of the United States of America, in answer to his respected note of the 26th February last, the inclosed memorial, together with thirty inclosures, which contains the desired information respecting the coinage, bank and paper money of the German Empire, as well as a statement of the debts of the empire.

The undersigned avails himself of this occasion to renew to the minister the assurances of his most distinguished consideration.

VON HOHENLOHE.

Mr. ANDREW D. WHITE,
Envoy Extraordinary and Minister Plenipotentiary of the United States of America.

Memorial concerning the German laws on the subject of coinage and bank, and paper money in Germany, as well as of the indebtedness of the empire.

* * * * * * *

IV.—IMPERIAL INDEBTEDNESS.

On this point information is furnished by the chancellor to Parliament in the inclosed memorials of March 28, 1878, April 4, 1879, and February 20, 1880.

It is remarked, in conclusion, that the imperial 4 per cent. debt stood at the Berlin Exchange on the 1st instant at 100.

BERLIN, *May*, 1880.

[Translation.]

German Diet, Session II, 1878.

Memorial of the imperial chancellor von Bismarck to the German Diet in relation to the execution of the laws concerning the different government loans.

Until the close of the fiscal year 1876–'77, there was no need for claiming credit in order to cover the expenses provided for by laws of January 27, 1875, and January 3, 1876; those expenses, amounting to about 12,000,000 marks, having been advanced by the imperial treasury up to the early part of February, 1877.

Of the treasury notes (bonds), printed according to publication of November 17, 1876, amounting to 14,300,000 marks, viz:

Series I of 1876, over 6,300,000 marks, to circulate from October 23, 1876, to January 23, 1877; and

Series II of 1876, over 8,000,000 marks, to circulate from November 15, 1876, to February 17, 1878—

Series I was not put in circulation at all, and of Series II only 5,200,000 marks came into circulation since the early part of February, 1877. These notes (bonds) were sold at a discount, which amounted on the whole to 3,771.16 marks, or at an average rate of interest of 3.613 per cent. per annum.

During the months of February, April, and May, 1877, four more series of notes were issued, the discount and the costs of sale of which amounted to 217,618.31 marks, and the circulation of the same reduced to one day amounts to 2,579,386,875 marks, and the average rate of interest to 3.037 per cent. per annum.

Besides the items allowed by laws of January 27, 1875, January 3, 1876, and January 3, 1877, aggregating 21,487,553 marks, there have been further appropriated during the year of 1877 42,264,388 marks for the post-office and telegraph marine departments, and for the imperial army (law of May 10, 1877); 6,415,000 marks for a railroad to be built in Alsace (May 21, 1877); 7,564,380 marks for the purchase of two building lots in Berlin for imperial purposes (May 23, 1877).

The whole amount of money to be covered by credit and required by the imperial department of finance, not counting 124,000,000 marks treasury notes to be issued, and appropriated by law of April 25, 1877, for the purpose of strengthening the fund for incidental expenses of the imperial treasury, and for the execution of the intended reforms in the mint department, figured up to 77,731,321 marks, of which, according to law of May 21, 1877, 4,415,000 marks belong to the fiscal year 1878–'79; and there being a saving of 463 marks in the marine department, the actual amount to be covered by credit is 73,315,858 marks. Of this amount 40,000,000 marks had to be held ready for the months of June, July, and August, 1877, partly for defraying the expenses alluded to in the above-mentioned laws, partly for redeeming treasury notes issued for the same purpose.

As soon as this larger demand presented itself the time to negotiate a funded loan was at hand. This loan was authorized by law of January 27, 1875, section 2, in order to raise the above 77,731,321 marks, appropriated by the aforesaid laws, and the bonds being 200, 500, 1,000, 2,000, and 5,000 marks, bearing 4 per cent. per annum, and payable semi-annually, on April 1 and October 1.

To realize this loan the government proceeded but slowly. According to an agreement of June 17, 1877, the amount of 43,000,000 marks (nominal at the course of 94 per cent.) was negotiated through a syndicate of Berlin banking houses, and the value (proceeds) of this (part of the) loan was paid into the imperial treasury during the months of June and July, 1877, amounting to 40,420,000 marks. This syndicate has offered, according to a stipulation, the nominal amount of 43,000,000 marks, at the rate of 94 per cent., and the subscription took place at 39 different cities of Germany, where the nominal amount of 334,626,900 marks was subscribed.

Meanwhile there were sold by means of the imperial treasury during the time from September 13 to November 9, 1877, nominal 3,203,600 marks at the stock exchange.

The sales have been made, to a large extent, in many small amounts, partly at the rate of 96 per cent., partly at 96.40 per cent., and partly at 95.75 per cent., and have realized for the imperial treasury—deducting 4,805 marks for commission and brokerage—the net amount of 3,068,593 marks. This procedure had to be given up again, however, as the government had to look towards a more speedy realization of larger amounts, corresponding with the expenses to be defrayed from this loan. Therefore, two more amounts have been negotiated through a syndicate by the imperial treasury, viz: (*a*) November 10, 1877, 12,000,000 marks (nominal), at 95 per cent.; (*b*) January 24, 1878, 10,000,000 marks (nominal), at 94.25 per cent.; and the net proceeds realized from both amounted (less 6,000 and 5,000 marks, respectively, for commission) to: (*a*) 11,394,000 marks; (*b*) 9,420,000 marks; total, 20,814,000 marks.

Another amount of 4,000,000 marks nominal has been taken by the imperial veteran fund, at the rate of 95.25 per cent., realizing therefrom, net, 3,810,000 marks.

Referring to the above, and with regard to the savings up to the end of the fiscal year 1877–'78, there have been realized up to date, from the loan of 72,203,600 marks (the required amount being 73,315,858 marks), net, 68,112,593 marks.

The course of exchange of this part of the loan is in average 94.334 per cent., and the rate of interest to be paid by the imperial treasury on the net proceeds amounts to 4.240 per cent.

The expenses defrayed from this loan during the fiscal year 1877–'78 can only be accounted for by a specified report after a final financial account has been rendered. At the present time the different branches of the government connected with, or interested in, this loan have only furnished summary items of their expended amounts, according to which the expenses partly actually defrayed, partly advanced, amount, up to February 28, 1877, as follows:

	Marks.
1. Marine department:	
a, law of January 27, 1875	12,259,095
b, law of May 10, 1877	22,932,913
2. Post-office and telegraph department	15,728,580
3. Imperial army (new buildings)	1,219,098
4. Railroads	38,235
5. For two building lots in Berlin (for the empire)	7,564,380
Total	59,742,301

This amount, however, will be increased, according to the estimates just furnished, to nearly 63,000,000 marks up to the end of this month; and, as yet, it cannot be stated what the amount to be accounted for will be at the end of the current fiscal year 1877–'78.

BERLIN, *March* 28, 1878.

EXHIBIT A.

Current number.	Denomination of the notes.	Sold.	Amount of interest in full.		Total amount.	Deduct from total (column 5).			Receipts.
						Discount allowed.	Cost of sale.	Total.	
		Marks.	*P.c.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*	*Marks.*
1	I. Series of 1877 (time of circulation January 25 to May 25, 1877)..	6,300,000	3	63,000	6,363,000	$38,304\frac{90}{100}$	6,500	$44,804\frac{90}{100}$	$6,318,195\frac{10}{100}$
2	II. Series of 1877 (time of circulation February 15 to June15, 1877)	8,000,000	3	80,000	8,080,000	$66,218\frac{10}{100}$	4,375	$70,593\frac{10}{100}$	$8,009,406\frac{90}{100}$
3	VII. Series of 1877 (time of circulation Mar. 10 to August 10, 1877)..	4,000,000	3	50,000	4,050,000	$35,990\frac{35}{100}$	5,000	$40,999\frac{35}{100}$	$4,009,000\frac{65}{100}$
4	XI. Series of 1877 (time of circulation May 21 to August 21, 1877)..	8,300,000	3	62,250	8,362 250	$55,795\frac{96}{100}$	5,425	$61,220\frac{96}{100}$	$8,301,029\frac{4}{100}$

GERMAN DIET, I SESSION, 1879.

Memorial of the imperial chancellor von Bismarck, to the German Diet, in relation to the execution of the laws concerning the different government loans.

The memorial submitted to the Diet on March 28, 1878, in relation to the execution of the laws concerning the government loans comprises the different loans contracted up to February 11, 1878, as well as these which were actually accounted for up to the close of the fiscal period from January 1, 1876, to March 31, 1877.

In addition to the report for the period, January 1, 1876, to March 31, 1877, the expenses during the fiscal year 1877–'78, and also the manner of furnishing the means for defraying these expenses, are accounted for.

At the end of the fiscal year 1877–'78 there were 102,801.43 marks saved by the marine department, and adding to this the amount of 463 marks saved in the fiscal year 1876–'77, the amount to be covered by the imperial loan of 1877 has been reduced to 77,628,056.57 marks, a reduction of 103,264.43 marks.

According to the memorial of March 28, 1878, 68,112,593 marks of the loan of 1877 have been realized, of the amount of 72,203,600 marks nominal.

After that, during the time from April 8 to June 19, 1878, a nominal amount ot 2,547,800 marks has been sold at the stock exchange by means of the Imperial Bank. This amount has been sold in numerous small sums at a course of 96.40, some at 96.10, and the larger part at 96 per cent., realizing for the imperial treasury—3,822 marks for commission and brokerage deducted—a net receipt of 2,446,929 marks.

Another amount of 642,000 marks has been sold to the imperial veteran fund at 96 per cent., realizing therefrom net 616,320 marks.

Meanwhile imperial decree of June 14, 1878, ordered that the necessary amount of bonds in the total sum of 97,484,865 marks (provided for by laws of April 29, 1878, May 8, 1878, and June 12, 1878), be printed and issued in denominations 200, 500, 1,000, 2,000, and 5,000 marks, and that the loan should bear 4 per cent. interest per annum, payable semi-annually on April 1 and October 1. Of this amount (97,484,865 marks) only 9,120,000 marks are to be expended (according to law of May 8, 1878) during the fiscal year 1879–'80, and the amount to be defrayed from the imperial loan of 1878 up to the end of the fiscal year 1878–'79 figures up therefore (the probability of some savings in expenditures excepted) 88,364,865 marks.

As early as June, 1878, however, the expenses on this account had reached such a height that it was considered necessary to realize larger amounts, and this with all possible speed. A speedy realization of larger amounts by off-hand sales at the stock exchange could not be expected, however. Therefore, in order to cover the nearest amount of expenses, 17,400,000 marks (nominal) of the loan of 1878 and 2,600,000 marks (nominal) of the loan of 1877, together, 20,000,000 marks have been negotiated by the Imperial Bank on June 22, 1878, through a syndicate of banking firms at the course-rate of 95 per cent.

The receipts were these :

	Marks.
a, for the loan of 1878, less commission, 8,700 marks	16, 521, 300
b, For the loan of 1877, less commission, 1,300 marks	2, 468, 700
Total	18, 990, 000

Furthermore, in July, 1878, 900,000 marks (nominal) of the loan of 1878 were sold to the imperial veteran fund at the rate of 96 per cent., realizing therefrom 864,000 marks, and during the time from August 17 to August 29, 1878, there were sold by the Imperial Bank, at the stock exchange, 267,300 marks, at the rate of 96.10 per cent., realizing therefrom, less 401 marks for commission and brokerage, 257,474 marks.

With regard to the demands, which had meanwhile considerably increased, there has been negotiated by the Imperial Bank, through a syndicate, on September 23, 1878, the nominal amount of 30,000,000 marks of the same loan at the rate of 95 per cent., realizing therefrom (first deducting 15,000 marks for commission), net, 28,485,000 marks for the imperial treasury.

It was not advisable, then, to sell a nominal amount of 10,000,000 marks of the loan of 1878, during the time from December 3, 1878, to January 29, 1879, by means of the Imperial Bank at the stock exchange. For the first half of this sum, 5,000,000 marks, the rate of 95 per cent. is realized, while the second half has been sold to a great extent at the rate of 95.20 per cent., and in smaller amounts at the rate of 95.25 and 95.40 per cent.; and after deducting 15,000 marks for commission and brokerage these sales have brought 9,496,104 net.

Finally, in January, 1879, there were sold to the imperial veteran fund, at the rate of 95.20 per cent., 2,300,000 marks of the same loan, realizing therefrom 2,189,600 marks.

Of the sums demanded from the loan of 1877, 77,628,056.57 marks, and from the loan of 1878, 88,364,865 marks, = total 165,992,921.57 marks, there have been realized up to March 31, 1879: *a*, loan of 1877, 73,664,542 marks; *b*, loan of 1878, 57,812,478 marks; total, 131,457,020 marks by negotiating bonds; *a*, of the loan of 1877, over 77,993,400 marks; *b*, of the loan of of 1878, over 60,867,300 marks; total, 138,860,700 marks.

The average course-rate is 94.668 per cent., and the average interest-rate to be paid by the imperial treasury on the net proceeds amounts to 4.225 per cent.

A specified report of the expenses during the fiscal year 1878–'79, with regard to the laws governing the loans, will be made after a final adjustment of accounts.

According to the summary items demanded by the different branches of the government, the total amount is estimated at 130,756,082 marks, which will be necessary up to March 31, 1879.

BERLIN, *April* 4, 1879.

GERMAN DIET, THIRD SESSION, 1880.

Memorial of the imperial chancellor von Bismarck, to the German Diet, in relation to the execution of the laws governing the different government loans.

The memorial says: The memorial submitted to the Diet April 4, 1879, in relation to the laws governing the loans comprises the amounts issued and negotiated up to March 31, 1879, and also the expenses based upon those laws, paid and actually accounted for up to the end of the fiscal year 1877–'78.

In addition to the report for the fiscal year 1877–'78, the expenses during the fiscal year 1878–'79, and also the manner of furnishing the means for defraying the expenses for the fiscal year 1878–'79, are accounted for.

The final statement for the fiscal year 1878–'79 shows a saving of 12.97 marks on the part of the post-office and telegraph department, so far as the expenses had to be defrayed from the loan of 1877, and a saving of 7,169.44 marks on the part of the marine department from the loan of 1878, under the same conditions. Adding to this the amount previously saved by the last-mentioned department, viz, 103,264.43 marks, the demand on the loan of 1877 has been reduced to 77,628,043.60 marks—a saving of 103,264.43 marks; and the demand on the loan of 1878 has been reduced to 97,477,695.56 marks—a saving of 7,169.44 marks.

According to memorial of April 4, 1879, there have been realized up to March 31, 1879: (*a*) Of the loan of 1877, 73,644,542 marks; (*b*) of the loan of 1878, 57,812,478 marks; total, 131,457,020 marks. By negotiating bonds: (*a*) Of the loan of 1877, over 77,993,400 marks; (*b*) of the loan of 1878, over 60,867,300 marks; total, 138,860,700 marks.

After a subsequent correction with regard to the apportionment for these two years, the change up to March 31, 1879, shows the following result: (*a*) Of the loan of 1877, 87,000,000 marks; (*b*) of the loan of 1878, 60,860,700 marks; total, 138,860,700 marks. And the amounts realized: (*a*) Of the loan of 1877, 73,650,812.15 marks; (*b*) of the loan of 1878, 57,806,208.80 marks; total, 131,457,020.95 marks.

Since submitting the memorial of April 4, 1879, it has been ordered by imperial decree of June 13, 1879, that the amounts demanded (provided by laws of March 30, 1879, and May 15, 1879), amounting on the whole to 68,021,071 marks, be negotiated (according to the law of June 19, 1868), in bonds of the denominations of 200, 500, 1,000 2,000, and 5,000 marks, the loan bearing 4 per cent. interest per annum, payable semi-annually on April 1 and October 1.

Based upon this decree, and upon those on previous and similar occasions, there have been negotiated by the Imperial Bank, from April 1 to September 30, 1879, (*a*) of the loan of 1878, over 12,914,500 marks; (*b*) of the loan of 1879, over 16,091,500 marks; total, (nominal), 29,006,000 marks, at the current rate of 98 to 99.30 per cent. off-hand in various accounts, and the net receipts, after deducting commission and brokerage, amount to (*a*) of the loan of 1878, 12,728,331.25 marks; (*b*) of the loan of 1879, 15,914,-825.25 marks; total, 28,643,156.50 marks, the average current rate being 98.749 per cent. Up to September, 1879, had been realized (*a*) of the loan of 1877, 73,650,812.15 marks; (*b*) of the loan of 1878, 70,534,540.05 marks; (*c*) of the loan of 1879, 15,914,825.25 marks; total, 160,100,177.45 marks; by selling bonds: (*a*) of the loan of 1877, 78,000,-000 marks; (*b*) by the loan of 1878, 73,775,200 marks; (*c*) of the loan of 1879, 16,091,-500 marks; total (nominal), 167,866,700 marks. Besides this there have been sold off-hand during the first half of the month of October, 1879—of the loan of 1878 (nominal), 345,000 marks, and of the loan of 1879 (nominal), 714,800 marks; total, 1,059,800 marks at the current rate of 98.50 per cent., and 98.60 per cent., with a net receipt of 339,-652.50 marks, and 703,236.90 marks, respectively; grand total, 1,042,889.40 marks. And towards the end of October, 1879, the expenses having increased considerably, while a speedy realization of larger amounts by off-hand sales of bonds at the stock exchange could not be anticipated, 30,000,000 marks (nominal), (*i. e.*, 2,000,000 marks of the loan of 1877; 6,000,000 marks of the loan of 1878, and 22,000,000 marks of the loan of 1879), were negotiated by means of the Imperial Bank through a syndicate of banking houses, at the current rate of 96 per cent.. less 1 per cent. brokerage.

The receipts of this transaction were as follows:

	Marks.
(*a*) of the loan of 1877, less 1,000 marks commission	1,917,000
(*b*) of the loan of 1878, less 3,000 marks commission	5,751,000
(*c*) of the loan of 1879, less 11,000 marks commission	21,087,000
Total	28,755,000

In January, 1880, the off-hand sale was taken up again, and up to January 31 there were negotiated through the Imperial Bank 8,290,300 marks of the loan of 1879 at the current rates of 97.75 to 100.75 per cent., and the proceeds of the transactions, less commission and brokerage, amounted to 8,114,783 marks.

On the whole there were realized up to January 31, 1880:

	Marks.
(*a*) of the loan of 1877	75,567,812 15
(*b*) of the loan of 1878	76,625,192 55
(*c*) of the loan of 1879	45,819,845 30
Total	198,012,850 00

by negotiating bonds:

	Marks.
(*a*) of the loan of 1877, over	80,000,000
(*b*) of the loan of 1878, over	80,120,200
(*c*) of the loan of 1879, over	47,096,600
Total (nominal)	207,216,800

The average current rate of these bonds is 95.5583 per cent. and the rate of interest to be paid by the imperial treasury on the proceeds amounts to 4.1859 per cent.

A special report on the expenses for the fiscal year 1879–'80 as far as the laws governing the loans are connected with them, will be made after a final adjustment of the account has been reached.

At this time there are but summary demands presented by the different branches of the government according to which the whole amount demanded on the loans may be estimated at 190,643,530 marks up to January, 1880.

BERLIN, *February* 22, 1880.

AUSTRIA.

Mr. Kasson to Mr. Evarts.

No. 299.] LEGATION OF THE UNITED STATES,
Vienna, March 16, 1880.

SIR: In response to your instruction of February 11, 1880, requiring, for the use of the Treasury Department, certain extended and detailed information in respect to coinage and coinage laws, finances and financial laws, covering a long period of the history of this monarchy, I have the honor to make the following report, and to transmit the documents hereafter mentioned:

* * * * * * *

6. In my dispatch No. 31 of 1877, I transmitted a statement in detail, giving most of the facts desired under this category. That dispatch is published in the diplomatic volume of 1878. I have now prepared new tables from late official publications, coming for Austria down to June 30, 1879. That for Hungary was furnished since this dispatch by the finance minister at Pesth, viz, on April 9, 1880, but up to what date compiled is not certified.

For answer to the sixth category are submitted the tables appended hereto, marked 299, vi, and 299, vii, respectively, for Austria and for Hungary. Also, No. 299, viii, showing the *common* floating debt of Austria-Hungary. These tables arranged so as to be responsive to the subcategories under No. 6 of your circular.

I trust the Secretary of the Treasury is so well acquainted with the difficulty of collecting, analyzing, and clearly tabulating intricate details of accounts, and especially in a foreign language, as not to consider me dilatory in my response to your circular. It has required the most patient and laborious investigation on my part to make a reasonably complete statement in the form which he required. It is only recently that system and publicity have existed in the financial records of the Austrian administration; and even now the reports are obscure, owing to the numerous expedients formerly resorted to for obtaining money, and the different money standards. The variety, and even the nomenclature, of the various debts and loans bring despair to a foreign accountant.

The debt, both of Austria and of Hungary, has been increased since the date of the last official report (June 30, 1879) by many millions, owing to deficits of revenue. The 4 per cent. gold loan of Austria is about to be increased by 20 millions of non-reimbursable loan at the rate of about 89 in paper.* The Hungarian Government is also obliged to put a further loan upon the market.

I have, &c., JOHN A. KASSON.

Hon. WM. M. EVARTS, *Secretary of State.*

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* P. S.—Since the foregoing dispatch was dated, this loan has been taken by a Vienna bank at 89.27, payable in paper. At the same date, the gold florin was worth 1.18½ in paper. This makes the selling price of the 4 per cent. gold loan a fraction over 73, reckoned in gold.

No. 299, VI.

CATEGORY 6.—*Debt of Austria, June* 30, 1879.

A. Description.	A. Amount in florins.	B. Maturity.	C. Interest.	D. In default or not.	E. When issued.	E. At what rate issued.	F. Market value in paper, April, 6, 1880.
Consolidated debt, obligation in paper	1,314,669,117	Not repayable	5 per cent., subject to tax of 16 per cent.	None	1868 and since.	Old debt capitalized on basis of par at 5 per cent. interest.	73.15.
Consolidated debt, obligation in silver	994,684,148	do	do	do	do	do	73.70.
Gold rent, obligation in gold	315,030,000	do	4 per cent., tax free.	do	1876 and since.	67.54 to 74.80 in paper.	89.10 in paper.
Various debts payable in paper and chiefly lottery loans.	289,577,538	As determined by annual lotteries.	Chiefly 5 per cent.	do	1839, 1854, 1860, 1864.	Various; below par.	From 128 to 172, according to chances.
Loan from national bank (for charter) paper	79,748,918	At expiration of charter in semi-annual payments till 1910.		do	1878	do	Not in market.
Loan from Boden Credit Anstalt, silver	48,021,824		5½ per cent.	do	1866	do	Do.
Sundry matured debts, unclaimed, payable in paper.	4,785,274	Past due	None	do	Old	do	Do.
Sundry floating debts	2,909,529	On demand	3 to 5 per cent	do	do	Unknown	Various; below par.
Indemnity rents, capitalized at	12,249,203	No date	5 per cent	do	do		
Sundry old debts not converted	2,363,866	For conversion		do	do		
Sundry other special debts	25,091,050	Various	3, 4, and 5 per cent	do	do		
Treasury bills	30,600,000	1881, 1882	5 per cent	do	1878	Under par	101 to 102.
Funded feudal debt (provincial) guaranteed	180,722,755	Forty years	5 per cent. subject to 10 per cent. tax.	do	Since 1849	Delivered at par	89 to 104.50.

No. 299, VII.

CATEGORY 6.—*Debt of Hungary. Statement furnished April 9, 1880.*

A. Description.	A. Amount.	B. Maturity.	C. Interest.	D. In default or not.	E. When debt issued.	E. At what rate issued.	F. Present market-value in paper.
Railway loan	85, 126, 600	1868–1918	5 per cent. January and July.	.....	Jan. 1, 1868	68.56	100. 84
Lottery loan	30, 000, 000	1871–1920		.....	July 1, 1870	80 per cent	115. 25
Hypothecated loan for the Gömör industr. railways	6, 624, 300	1872, 1912	5 per cent. February and August.	.....	July 1, 1871	79 per cent	
Thirty millions State loan	30, 000, 000	1872, 1903	5 per cent April and October	.....	Oct. 1, 1871	75¼ per cent	
Fifty-four millions State loan	54, 000, 000	1875, 1904	5 per cent. January and July	.....	Jan. 1, 1873	74 per cent	
Six per cent. gold stock (consolidated fund)	218, 675, 700	Not repayable	6 per cent. January and July	.....	Jan. 1, 1876 / Mar. 1, 1879	92.73	104. 70
Forty-five millions priority loan (obligations) of the first emission	45, 020, 100	1869, 1952	5 per cent January and July	.....	Mar. 1, 1869		82. 25
Thirty millions priority loan (obligations) of the second emission	30, 000, 000	1873, 1963	5 per cent January and July	.....	Aug. 1, 1873	61½ per cent	94. 50
Obligations for the redemption of the shares of the Eastern Railway	9, 989, 300	1877, 1952	5 per cent. January and July	.....	Dec. 30, 1876		84. 50
Land redemption loan.. Hungarian	211, 839, 558	1857, 1897 / 1867, 1907	5 per cent. May and November	.....	Nov. 1, 1854		92. 50 / 91. 25
Land redemption loan.. Transylvanian	78, 600, 480	1866, 1916	5 per cent. January and July	.....	July 1, 1856		91
Land redemption loan.. Croatian	16, 933, 129. 50	1857, 1897 / 1867, 1907	5 per cent. May and November	.....	Nov. 1, 1854		94
Vine tithe loan	24, 982, 360	1869, 1891	5 per cent. January and July	.....	Jan. 1, 1869		92
Remnancy lands redemption loan	514, 200	22 years from the date of issue.	5 per cent. January and July	.....	July 1, 1874		90

No. 299, VIII.

CATEGORY 6.—*Common floating debt of Austria-Hungary, June 30, 1879.*

A. Description.	A. Amount.	B. Maturity.	C. Interest.	D. In default or not.	E. When issued.	E. At what rate issued.	F. Market-value in paper, April 6, 1880.
	Florins. Kr.						
Old outstanding mortgage bills	85,097 50	Past due	Ceased	Not presented	Various old dates	Unknown	Not quoted.
Current mortgage bills (in fact secured Treasury notes).	90,902,650	Various, at 6 months from date.	First at 6 per cent. gradually reduced to 3½ now.	No	Current dates as required.	Various	Not quoted.
State circulating notes (paper money), at 1 florin	65,136,932			Specie payment suspended since 1848.	1866 and since	Par	Par with silver florins since 1879.
5 florins	104,112,840						
50 florins	151,762,250						
Total floating debt, date of June 30, 1879	411 999,769 50						

SERVIA.

No. 340.] LEGATION OF THE UNITED STATES,
Vienna, July 6, 1880.

The Hon. WILLIAM M. EVARTS,
Secretary of State, Washington:

SIR: It is only a few days ago that I received, in answer to a former request, from the Servian minister in Vienna, a memorandum (in German) embracing the statistics which are reported in this dispatch, and which are now translated and transmitted for the use of the Treasury Department, in obedience to your circular of the 11th February, 1880. * * *

6. (Relative to debt.) Prior to 1876 Servia had no State debt. During this year, however, and during the succeeding war for independence, the State contracted the following debts:

	Dinars.
1. The forced loan in the country pursuant to the law of January 19, 1876.	12,000,000
2. Subsequently under law of July 10, 1877	2,800,000
Total issued at par payable in 5 years, interest 8 per cent., bonds each for 50 dinars	14,800,000
3. Loan in Russia, 8 per cent., at 21 years	8,000,000
Total	22,800,000

Owing to the wars of 1876 and 1877, the interest remains unpaid; and larger figures are therefore required to represent the total debt.

The foregoing statement is made in accordance with the exhibit given to me by the Servian minister here. But I beg to refer to my dispatch, No. 261, for the debt statement which I obtained on the occasion of my visit to Belgrade, and which I believe more accurately represents the total debt of Servia, including the floating obligations.

I have the honor to be, sir, your most obedient servant,

JOHN A. KASSON.

[Extract.]

From Mr. Kasson's No. 261 *of November* 19, 1879, *published in Foreign Relations,* 1879, *pp.* 82 *et seq.*

THE FINANCIAL CONDITION OF SERVIA.

Aside from the military expenses of the principality, the finances of Servia would be easily managed, and an equilibrium in the budget easily maintained. After 1873 they largely increased their armament, and again still more in the war of 1876. These expenditures involved them seriously in debt. The statement of the public debt of Servia, given to me officially, is as follows:

	Francs.
Russian loan of 1876, at 6 per cent	6,816,000
Arrears of interest	918,843
Owed to foreigners for supplies	1,617,981
Home debt, national loan 8 per cent	7,626,742
Interest on same	1,249,288
Requisitions	7,746,591
Deposits under the law	2,916,411
For supplies	1,422,363
Total public debt in 1879	30,314,219

The mode of stating the liabilities is somewhat obscure, and it would not be unwise to add some millions on the 1st of January, 1880, in view of deficits to be annually covered by loans. They are now proposing to again increase the armament, and to purchase a large quantity of the best modern arms for their entire military force. This can only be accomplished by a new emission of obligations which cannot be placed at par. In the present condition of the country increased taxation cannot well be borne, though they claim that the present debt amounts to only 18 francs per head on the number of inhabitants. They use no paper money in Servia. The only moneys are gold and silver. For these they have adopted the French system, and have begun a national coinage, of which the one dinar (franc) silver pieces are already in circulation. Pending the introduction of their own gold coins, the Austrian gold ducats (about 12½ francs) continue to be the favorite coin of the country and circulate largely in Servia, although rarely seen in Austrian circulation.

RUSSIA.

No. 59] LEGATION OF THE UNITED STATES,
St. Petersburg, November 24, 1880.

SIR: Your special and separate of February 11, 1880, requesting certain information on behalf of the Secretary of the Treasury regarding Russian coinage and finances, was in the same month communicated to the foreign office by Mr. Hoffman.

I have received the reply of the minister thereto, dated October 31–November 12, with which he incloses various statements and tables and one volume furnished by the minister of finance. Of the note and its inclosures I transmit herewith translations. The volume (in French) sent by the minister I forward by book post.

* * * * * * *

I am, sir, very respectfully, your obedient servant,

JOHN W. FOSTER.

Hon. WM. M. EVARTS,
Secretary of State, Washington, D. C.

[Inclosure 1, in No. 59.—Translation.]

ST. PETERSBURG, *October* 31–*November* 12, 1880.

Mr. MINISTER: By a dispatch dated February 11, inclosed in a note of Mr. Hoffman of the 16–28 of the same month, Mr. Evarts has manifested the desire to have communicated certain information concerning the coinage and general finances of the empire of Russia. In conformity with this desire, I have the honor to transmit to you herewith the information which the minister of finance has been able to furnish as follows:

1. Historical sketch of the issue of securities in Russia.
2. List of railroad obligations issued by the State.
3. State of the last quotations of the Bourse for interest loans of Russia.
4. List of imperial loans.
5. Ukase of the 13th of February, 1868, to the administrative senate as to credit notes.
6. Ukase of the 12th of December, 1872, to the administrative senate as to notes of the imperial treasury.
7. Complimentary regulation of the preceding ukase.

* * * * * * *

Receive Mr. Minister, the assurance of my most distinguished consideration.

BARON JOMINI.

To Mr. FOSTER, *&c., &c.*

Upon the original, His Imperial Majesty has written "So be it," in St. Petersburg, 12th December, 1872.

Regulations.—Of the new ten issues (coupons) of notes of the imperial treasury from clxxxvi to cxcv included.

1. This series in three millions of roubles silver each is issued for a period of eight years.
2. The value of these notes has been determined as formerly, in 50 roubles, and the value of percentage at 4.32 per year, or 18 copecks per month.
3. The form and signatures of these notes remain as formerly and similar to the notes formerly issued.
4. These notes are issued and are received by the treasury as formerly in all payments.
5. The redemption of the notes of the new issues will be effected at the option of the government within eight years, the government reserving to itself the right to issue new notes for such of the notes as will not have reached the treasury, and will be outstanding at the end of said period of eight years.
6. The term of percentage payable on these notes commence on clxxxvi to 1st March, clxxxvii and clxxxviii from 1st April, clxxxix to 1st May, cxc to 1st June, cxci to 1st August, cxcii and cxciii, 1st September, 1873, and cxciv and cxcv to 1st October, 1873. The term of which is determined by special printed instructions on the back of the notes in writing.

7. The interest is paid to bearer both at the central and the provincial treasuries, upon coupons forming the outward margin around the notes. The treasurer detaches the coupons in the order of their dates.

8. The percentage is given upon presentation of the note, at the conclusion of one year or more, but always for the full expired year.

9. The methods of percentages is conducted in the following manner:

A. Between private persons in all accounts, their presentation is mutually accepted.

B. In payments of these notes into the treasury, and the percentages for the settlement of accounts, calculations are only made on the full past month, and for the current month such is not taken into consideration. On this understanding all accounts, in payments made by these notes to the treasury by private persons, as also by the treasury itself, is conducted, and the latter settle their accounts in the same manner.

C. In regard to accounts between the treasury and the other departments, for interest accruing on moneys from the date of receipt to that of actual expenditure, the existing sytem is preserved.

10. These notes are accepted in payments to the treasury, only in such cases when the payments equal a sum not less than the amount of the note and its additional percentage; and the treasury, in order to avoid extra accounts, do not enter into any exchangings or other transactions with these bills or notes.

President of the Imperial Council,

CONSTANTINE.

With the original. A true copy.

On the establishment of these conditions appear the circulation of the issues of 1874 to 1880 of the notes of the imperial treasury from cxcvi to cclvii series included.

By the imperial order 1st July, 1839, for decreasing the quantity of the more portable monetary securities, it was determined that besides the then employed bank notes and deposit bills issued from the cash department instead of silver money of Russian coinage, all bills or notes were received in service throughout the empire as being equal to silver money in all payments and obligations, both as regards persons and the crown, in monetary transactions, as also mutually by the crown in their dealings with the crown themselves; for on presentation of these securities to the cash department, there was given without delay and on order, for these securities and in exchange, the necessary value and quantity of silver coinage.

By imperial manifest 1st July, 1841, for facilitating the circulation of the securities according to the regulations, and for decreasing in public circulation the mass of small monetary securities, it was determined for deposits in the state bank and imperial loan banks to issue with those loans made under the security of immovable properties, security bills, or bank notes of 50 roubles silver value—these notes to guarantee the value, as determined by the imperial currency laws made and ordained, and besides they may immediately at any time be exchanged for metallic currency (ringing coin). To guarantee this immediate exchange in the state bank and imperial loan banks, it was compulsorily ordained that before every issue of such securities (notes) to place aside of the cash a sum equal in coin to not less than one-sixth part of the issued securities.

By the manifest of 1st June, 1843, it was acknowledged that at the proper time to change the then securities and other monetary issues to one general series, and for this purpose it was accepted that the security bank bills, as tokens already known to the public, guarantees fully such value, and gives free circulation equal to the silver coinage. Therefore, the said manifest determines that the hitherto employed security used to that time be gradually withdrawn in favor of security bills or notes, the number of which notes be determined equally with the quantity of the bank notes withdrawn, and the guaranteeing of which value by the government is their imperial value, and immediate exchange at all or any time for metallic coin, and for which there has been established a permanent fund of gold and silver money, as determined by the decrees of the manifest of the 1st July, 1841, which rules that not less than one-sixth part of all issues be retained, in exchange for the sum of the securities of the bank bills.

According to the intents of this manifest, in the code of laws of the Russian Empire is contained, amongst others, the following:

Paragraph 7, laws of money.

STATUTE 163.—Silver Russian coined money is the principal imperial paying money, and the silver rouble signifies the highest valuation, and with its present subdivision forms the main determined legal standard (of the monetary unit) circulating as imperial money, being equal in itself to all tributes, obligations, and demands, as also every payment and civil expense is valued in silver.

NOTE.—The circulation of money is lightened by the circulation in the interior of the empire of a special monetary substitute under the denomination of bank notes. The laws that govern such issue, its circulation, and exchange into money is contained in the laws of bank security regulations.

Paragraph 11, *law of trade.*

STATUTE 613, *paragraph* 1.—In payments made in the interior, such by accepted laws can in no way be disallowed if payments in the stead of gold or silver of imperial security be in bills (bank notes).

Paragraph 11, *part* 11, *law of security bills* (*bank notes*).

STATUTE 1120.—Imperial bank notes can be issued of the following values, viz: 100, 50, 25, 10, 5, 3, and 1 roubles silver, of actual value; that is, containing in itself pure silver (4 zolotniks, 21 parts).

STATUTE 1125.—Imperial bank notes are guaranteed in all their value by the empire, and immediately may be exchanged for ringing coin (metallic currency).

STATUTE 1133.—That which relates to the exchange fund and exchange of the bank notes. The department is guided in all its details by the powers given in the manifest of the 1st June, 1843, relative to the exchange of the late securities for bills of credit.

Imperial determination of the 5th November, 1863. Journals of the special committee on changing bank bills or notes for metallic currency. Action was stayed till further instructions.

Summary of issued imperial railroad obligations.

Name of the issue.	Imperial decree.	Sum of former debt.	Remaining for payment.	Value of the obligations.	Number of the obligations.	When due.	Rate of interest.
Obligations of the Nicolai Railway Company.							*Per cent.*
First issue in roubles	July 18, 1867	75, 000, 000	73, 263, 875	In 625 and 125 roubles	429, 811	1951	4
Second issue in roubles	Mar. 25, 1869	69, 437, 500	68, 043, 875	do	422, 451	1951	4
Consolidated obligations of the Russian railways.							
First issue, pounds sterling	Jan. 9, 1870	12, 000, 000	11, 870, 400	In 1,000, 500, 100, and 50 pounds sterling	116, 520	1951	5
Second issue, pounds sterling	Feb. 17, 1871	12, 000, 000	11, 887, 750	do	96, 227	1952	5
Third issue, pounds sterling	Mar. 27, 1872	15, 000, 000	14, 880, 400	do	123, 011	1953	5
Fourth issue, pounds sterling	Nov. 14, 1873	15, 000, 000	14, 918, 800	do	94, 612	1954	5
Fifth issue, pounds sterling	Mar. 29, 1875	15, 000, 000	14, 915, 950	do	107, 689	1956	4½
Sixth issue, roubles metallic	May 12, 1880	150, 000, 000	150, 000, 000	In 625 and 125 roubles	652, 000	1961	4

For the superintendent of the department.

O. BEGEL.

Later exchange values of the imperial loans in percentage.

First Holland loan on Amsterdam exchange	97⅛
Anglo-Holland loan, 1864, in guldens	95¼
Anglo-Holland loan, 1864, in sterling pounds	92¼
Anglo-Holland loan, 1866, in guldens	94⅞
Anglo-Holland loan, 1866, in sterling pounds	92
5 per cent. internal loan, 1877, in sterling pounds	92
First 4½ per cent. internal loan, 1877, in sterling pounds	89
Second 4½ per cent. internal loan, 1877, in sterling pounds	86¾
4 per cent. loan, 1877, in sterling pounds	60¼
6 per cent. loan, in sterling pounds	65⅝
5 per cent. first loan, in sterling pounds	57½
5 per cent. second loan, in sterling pounds	87
5 per cent. fifth loan, in sterling pounds	56¾
5 per cent. sixth loan, in sterling pounds	81¼
5 per cent. seventh loan, in sterling pounds	86 15/16
4 per cent. loan, perpetual, on St. Petersburg exchange	87
3 per cent. loan, perpetual, on Amsterdam exchange	66¼
5 per cent. internal lottery loan, 1864	130½
5 per cent. internal lottery loan, 1866	128½
5 per cent. bank bills, first issues, on St. Petersburg, exchange	95¼
5 per cent. bank bills, second issues, on St. Petersburg exchange	92¾
5 per cent. bank bills, third issues, on St. Petersburg exchange	93¼
5 per cent. bank bills, fourth issues, on St. Petersburg exchange	93¼
5 per cent. first eastern loan on Berlin exchange	56.75
5 per cent. second eastern loan on Berlin exchange	57
5 per cent. third eastern loan on Berlin exchange	56.30
4 per cent. obligations Nicolai Railway, 1 and 2 issues, on Paris exchange	78
5 per cent. consolidated obligations, first issues, on the Berlin exchange	88.70
5 per cent. consolidated obligations, second issues, on the Berlin exchange	88.80
5 per cent. consolidated obligations, third issues, on the Berlin exchange	88.80
5 per cent. consolidated obligations, fourth issues, on the Berlin exchange	89.10
4½ per cent. consolidated obligations, fifth issues, on the Berlin exchange	80.40
4 per cent. consolidated obligations, sixth issues, on the Berlin exchange	69.30

Assistant Bookkeeper.

Summary of the imperial loans.

Name of the loan.	Date of imperial decree.	Sum of first loan.	Debt remaining in 1880.	Value of obligations.	Number of obligations.	When due.	Rate of interest.
							Per cent.
First Holland loan, in guldens	Jan. 15, 1798 / Oct. 14, 1815	50,600,000	19,600,000	1,000 guldens	19,600	1916	5
Anglo-Holland loan, 1864, in guldens	Apr. 3, 1864	117,933,000	38,540,000	do	38,540	1902	5
Anglo-Holland loan, 1864, in sterling pounds	Apr. 3, 1864	1,937,800	1,558,100	£100 sterling	15,581	1902	5
Anglo-Holland loan, 1866, in guldens	Nov. 4, 1866	31,357,000	26,367,000	1,000 guldens	26,367	1904	5
Anglo-Holland loan, 1866, in sterling pounds	Nov. 4, 1866	3,342,600	2,810,600	100 sterling	28,106	1904	5
Internal loan, in sterling pounds	May 26, 1877	15,000,000	14,692,500	In 500, 100, 20 sterling	366,333	1914	5
First 4½ per cent. loan, in sterling pounds	Dec. 9, 1849	5,500,000	2,310,000	In 1,000, 500, 100 sterling	13,108	1901	4½
Second 4½ per cent. loan, in sterling pounds	May 27, 1860	6,500,000	4,750,000	do	45,020	1921	4½
4 per cent. consols, first loan, rubles	Sept. 5, 1840	25,000,000	3,125,000	500 rubles	6,250	1884	4
4 per cent. consols, second loan, rubles	Aug. 4, 1842	8,000,000	850,000	do	1,700	1884	4
4 per cent. consols, third loan, rubles	Apr. 26, 1843	8,000,000	925,000	do	1,850	1884	4
4 per cent. consols, fourth loan, rubles	Oct. 26, 1844	12,000,000	1,975,000	do	3,950	1886	4
4 per cent. consols, fifth loan, rubles	Aug. 22, 1847	14,000,000	3,350,000	do	6,700	1890	4
6 per cent. Russian loan, rubles	May 10, 1817	94,639,727	43,648,348	Various sums, rubles	50,954	Date of not yet determined.	6
5 per cent. first loan, rubles	Aug. 16, 1820	40,106,000	18,570,615	do	29,737		5
5 per cent. second loan, rubles	June 23, 1822	43,000,000	32,655,970	do	38,199		5
5 per cent. fifth loan, rubles	July 8, 1854	50,000,000	30,049,500	do	48,828		5
5 per cent. sixth loan, rubles	Nov. 26, 1855	50,000,000	42,927,500	For 500 rubles	85,198		5
5 per cent. seventh loan, in sterling pounds	Apr. 14, 1862	15,000,090	15,000,000	In 1,000, 500, 100, and 50 sterling	157,500		5
5 per cent. Russian loan, rubles	May 31, 1860	288,377	288,377	Various sums	9		5
4 per cent. Russian loan, rubles	Mar. 13, 1859	154,138,801	153,857,614	do	28,221		4
3 per cent. loan, in sterling pounds	Mar. 20, 1859	7,000,000	4,005,800	In 1,000 and 100 sterling	32,779		3
4 per cent. loan of Imperial Bank, metallic payments	Dec. 16, 1860	60,000,000	45,081,900	300 rubles	130,273	1900	4
First internal lottery loan	Nov. 13, 1864	100,000,000	92,880,000	100 rubles	928,800	1925	5
Second internal lottery loan	Feb. 14, 1866	100,000,000	93,500,000	do	935,000	1926	5
*5 per cent. bank bills, second issue	June 2, 1863	10,000,000	8,865,750	100, 150		1912	5
5 per cent. bank bills, third issue	July 11, 1869	15,000,000	13,120,000	500, 1,000		1906	5
5 per cent. bank bills, fourth issue	Nov. 6, 1876	100,000,000	96,850,000	10,000 and 25,000 rubles		1913	5
First eastern loan	May 17, 1877	200,000,000	197,950,000	For 1,000, 100, and 50 rubles	1,491,986	1926	5
Second eastern loan	Aug. 11, 1878	300,000,000	298,500,000	In 1,000 and 100 rubles	683,121	1927	5
Third eastern loan	May 14, 1879	300,000,000	300,000,000	do	648,768	1928	5
Coupon bills of Imperial Bank forming floating debt:							
CLXXXVI to CXCV series	Dec. 12, 1872		30,000,000	Of 50 rubles		1880	4⅓
CXCVI to CXCIX series	Oct. 21, 1873		12,000,000			1881	4⅓
CC to CCIV series	Oct. 11, 1875		15,000,000			1883	4⅓
CCV to CCX series	Dec. 26, 1876		18,000,000			1884	4⅓
CCXI to CCXXII series	Oct. 30, 1877		36,000,000			1885	4⅓
CCXXIII to CCXXXIX series	Oct. 16, 1878		51,000,000			1886	4⅓
CCXL to CCLVII series	May 29, 1879		54,000,000			1887	4⅓

For the superintendent of the department. O. BEGEL.

*5 per cent. bank bills, first issue, issued by imperial decree 1st September, 1859, in exchange for bills of former credit established, with the yearly payment of 5 per cent., 1 per cent. of which is yearly annulled during 37 years, commencing with 1801. Bank bills of first issue to the 1st January, 1880, are in circulation for the sum of 189,594,450 roubles.

No. 70.] LEGATION OF THE UNITED STATES,
St. Petersburg, December 24, 1880.

SIR: The audited report of the imperial financial budget for the year 1879 has recently been published. Upon the whole it presents a better condition of the government treasury than might have been expected, in view of the burdens which of late years have been laid upon it and of the adverse circumstances which have tended to lessen the tax-paying capacity of the nation. The annual statement shows a constant increase in the receipts since 1877, and an excess of the respectable sum of 44 millions of rubles over the estimates for the year, and the largest total in the history of the country. This increase is mainly occasioned, first, by the five new or additional taxes imposed in view of the new charges upon the treasury, caused by the late war with Turkey, which began to take effect January 1, 1879, and, second, by the heavy importations. The large sum of 228 millions of rubles, or more than one-third of the entire revenue, is derived from the excise on spirits; the second item in importance of the revenue is the personal and land tax, 117 millions; and the third is derived from customs duties, 75 millions. The following table, which I have compiled from the report, will not be without interest as showing the relative sources of the revenue and the different kinds of taxes imposed by the imperial government.

Treasury receipts for 1879.

	Rubles.*
Personal and land tax	117,468,000
Commercial licenses	15,840,000
Spirits excise	228,260,000
Salt excise	13,408,000
Tobacco excise	12,961,000
Sugar excise	4,634,000
Customs duties	91,785,000
Stamp tax	14,231,000
Registry and record fees	8,971,000
Passports	3,341,000
Railroad ticket and express freight tax	7,074,000
Tax on mines	855,000
Coinage	4,831,000
Post-office	13,096,000
Telegraphs	7,381,000
Imperial domains	16,182,000
Imperial forests	13,048,000
Railroad companies	2,029,000
Receipts applicable to railroad bonds	17,182,000
Revenues of the Caucasus	8,765,000
Various sources	60,613,191
Total receipts	661,954,191
Estimates for 1879	617,097,942
Excess of receipts over estimates	44,856,249

The receipts for the past five years have been as follows:

	Rubles.
1875	576,493,152
1876	559,262,692
1877	548,830,831
1878	625,972,735
1879	661,954,192

The statement of annual expenditures is not so favorable as that of the receipts. The actual expenditures for the year have exceeded the estimates by the large sum of 166 millions of rubles, of which excess about 34 millions are chargeable to the regular wants of government, and 132 millions to extraordinary war expenses, mainly growing out of the Turkish war.

The ordinary expenses for the year were 643,892,258 rubles, and the war expenses 132,109,316 rubles—making the costs of government for the year 1879 776,001,574 rubles. The difference between the annual receipts and expenses appears to have been 114 millions of rubles, which, together with the deficit of the preceding year, has been met by a public loan. The interest on the public debt requires 172 millions

* The standard value of the Russian ruble is $0.734, but as the currency of the empire is in depreciated paper the gold value of the ruble may be approximately estimated at 50 cents.

of rubles, or near one-fourth of the entire expenses, and the war and navy departments consume near one-half of the total, or 338 millions of rubles.

The following table shows the distribution of the expenditures for 1879 among the various branches of the administration:

	Rubles.
Service of the public debt	172,448,303
Grand corps of the state	2,946,553
Holy synod and religion	11,098,472
Ministry of the imperial house	11,849,877
Ministry of foreign affairs	4,416,134
Ministry of war	308,860,570
Ministry of marine	30,454,602
Ministry of finance	94,708,687
Ministry of domains	18,258,447
Ministry of interior	60,258,707
Ministry of public instruction	16,406,145
Ministry of public works	17,131,788
Ministry of justice	16,371,969
Controller's office	2,310,868
General direction of the stud	847,802
Civil administration of Caucasus	8,632,242
Total expenses	776,001,575

The regular expenditures of government (not including extraordinary or war expenses) for the past five years have been as follows:

	Rubles.
1875	543,221,521
1876	573,107,058
1877	585,044,811
1878	600,510,612
1879	643,892,258

It will thus be seen that, while the national revenue has been annually increasing, the expenditures have likewise steadily augmented, and last year reached an amount greater than ever before.

The extraordinary war expenses for the past four years are given as follows:

	Rubles.
1876	50,998,115
1877	429,328,089
1878	408,142,969
1879	132,109,316
	1,020,578,489

This total may be regarded as the official statement of the approximate cost of the last war with Turkey. The public debt shows an increase during the year 1879 of 267,951,859 rubles, and is now stated to be 2,783,281,720 rubles; but this sum does not include (1st) the consolidated bonds of Russian railroads, (2d) the bonds of the Nicholas Railway, and (3d) the debt of the treasury to the Bank of Russia, which latter is 354,823,372 rubles.

While the national debt is a heavy burden upon the empire, it is to be noted that it is only four times the amount of the annual receipts of the treasury, and is much smaller than that which presses upon some of the other governments of Europe.

I inclose printed copies of the report from which the above tables have been compiled.

I am, sir, very respectfully, your obedient servant,

JOHN W. FOSTER.

Hon. WM. M. EVARTS,
Secretary of State, Washington, D. C.

Extract from report of the controller of the empire for 1879.

PUBLIC-DEBT STATEMENT OF RUSSIA.

T e amount of the public debt, January 1, 1879, was 2,515,329,861 rubles 35 copecks. This amount shows a decrease of the debt of 1878 (2,562,959,065 rubles 17 copecks) of 47,629,203 rubles 82 copecks, which is the result of the difference in the rate of ex-

change taken as a basis in converting foreign values into rubles (26 pence to the ruble in the account for 1879 and 23½ in that for 1878).

In the course of exchange the debt has been increased 300,000,000 rubles by the conclusion of the third orient 5 per cent. loan, concluded in compliance with the imperial decree of May 14, 1879, a loan redeemable in forty-nine years and realized at the course of 92½ per cent. For the other part, redemption has reduced the debt 22,054,141 rubles 26 copecks.

On the 31st of December the debt was fixed at 2,783,281,720 rubles 9 copecks. As for preceding years, this amount does not include—

1. The consolidated debt of Russian railroads.
2. The debt of the Nicholas Railroad.
3. The debit of the treasury at the Bank of Russia (354,823,372 rubles 41 copecks), January 1, 1880.

No. 72.] LEGATION OF THE UNITED STATES,
St. Petersburg, December 28, 1880.

SIR: In my No. 63, of the 8th instant, I referred to the abolition of the excise tax on salt, which would occasion a diminution of some twelve millions rubles to the national treasury necessary to be supplied by additional taxes in other directions. It is now officially announced that the minister of finance has submitted to the council of the empire a project for meeting this deficit, 1st, by a supplementary tax on commercial licenses; 2d, by an increase of 10 per cent. customs duty upon all articles of foreign importation; and 3d, by doubling the storage dues on all foreign merchandise deposited in government warehouses. The customs duty on foreign salt is to be reduced to 20 copecks per pound. While this increased import duty has not been officially announced, it seems to be certain that such will be the action of the government, for which reason I hasten to communicate the same to you for the information of the American exporters.

I am, sir, very respectfully, your obedient servant,

JOHN W. FOSTER.

Hon. WM. M. EVARTS,
Secretary of State, Washington, D. C.

DENMARK.

The Ministry of Finance to the Ministry of Foreign Affairs.

[Translation.]

MINISTRY OF FINANCE,
Copenhagen, March 15, 1880.

In returning herewith the note, with inclosure, from the chargé d'affaires of the United States in this city, which the ministry of foreign affairs had the goodness te send to this ministry, according to which note and inclosures the Government of the United States desires to be furnished with answers to a series of questions specifically formulated in the said inclosure, relating to the finances of Denmark, the ministry of finance take pleasure in communicating the following answers to the said questions:

* * * * * * *

6. *a–f.* On March 31, 1879, the Danish national debt amounted to—

	Cr.
Foreign debt	15,376,650 00
Domestic debt	159,382,772 91
	174,759,422 91

I. Of the domestic debt the following amounts consist in government bonds not redeemable on notice being given by the holder, or, in other words, payable at the option of the government, viz:

	Cr.
At 5 per cent	22,400 00
At 4½ per cent	14,960 00
At 4¼ per cent	9,050 00
At 4 per cent	155,881,552 34
At 3¾ per cent	58,154 20
At 3½ per cent	1,050 00
At 3 per cent	519,546 64
Total amount of domestic debt	156,506,713 18

The largest part of this debt dates from the close of the last and the beginning of the present century, and consists of loans contracted at different times and in different manners, which in 1813 were converted into government bonds, payable only at the option of the government. Since 1848 this debt was increased by the issue of bonds, the proceeds of which were devoted to the payment of the losses resulting from the war of 1848–'50, and of other floating debts. These bonds were sold at par.

The current prices of the 4 per cent. bonds vary from 95¼ to 95½ per cent.

II. Of the domestic debt the following amounts consist in redeemable bonds, *i. e.*, bonds on which partial payments may be made:

	Cr.
At 5 per cent	638,239 19
At 4 per cent	148,844 67
At 3½ per cent	12,279 49
At 3 per cent	2,350 70
Without interest	140 00
Total	801,854 05

The debt at 5 per cent. interest consists of amounts retained by the government from the salaries of such government employés as have not been appointed by the King, which amounts will be devoted to the support of these employés in their old age; or in case they are promoted to an appointment in the gift of the King, the said amounts will be refunded to them. The remainder of the above amounts will soon be redeemed.

III. There is a small debt with life interest, amounting to cr. 2,074,205.68. Since 1802 no such debts have been contracted.

The foreign debt consists in loans made in England in 1850–'61.

	Cr.
At 4 per cent., £328,000, at cr. 18¼	5,986,000 00
At 4 per cent., in accordance with law of March 10, 1861, £299,900, at cr. 18	5,398,200 00
At 4 per cent., made in Holland, Cfl. 1,079,000	1,618,500 00
At 4 per cent., made in Brabant, Wfl. 957,000	1,419,550 00
At 4 per cent., made in Hanover, gold fl. 100,000	186,250 00
At 3½ per cent., made in Holland, Cfl. 423,100	634,650 00
At 3½ per cent., made in Brabant, Wfl. 90,000	133,500 00
	15,376,650 00

The "English loan" consists of the remainder of the loan of £800,000 contributed in England in 1850 at 5 per cent.; but of which notice was given that it would be either redeemed or converted in 4-per cent. bonds; £400,000 were thus converted, redeemable at the rate of 1½ per cent. per half annum. The current prices of these bonds are 96@97.

The English loan of March 10, 1861, contracted for the purpose of constructing railways in Denmark, consisted originally of £660,000. The building contractors were obliged to take bonds of this loan in payment for labor and material at the price of 96 per cent. The payment of this loan is left to the option of the government. By successive purchases by the government of this class of bonds, the original debt has been reduced on March 31, 1879, to £299,900.

The loans in Holland were contracted during 1763 and 1785, and originally amounted to Cfl. 26,317,600. By paying portions thereof at different times, and converting other portions into 3½ per cent. bonds, these loans up to March 31, 1879, were reduced to Cfl. 1,079,000 in 4 per cent. coupon bonds, and Cfl. 423,100 in 3½ per cent. coupon bonds. They are redeemable at the option of the government. Whenever the coupons are run out, the old bonds are exchanged for new coupon bonds.

Of the loans contracted in Brabant during 1773 and 1788, which originally amounted to Wfl. 6,000,000, pretty much the same observations may be made as of the Hollandish loans. They have been reduced to Wfl. 957,000 in 4 per cent. bonds and Wfl. 90,000 in 3½ per cent. bonds.

The Hollandish and Brabant bonds are seldom thrown on the money market, but their market value may be said to be for the 4 per cent. bonds 98 @ 99, and for the 3½ per cent. bonds, 90 @ 91.

The loan in Hanover was contracted in 1791, amounting to 100,000 gold florins.

It is an unredeemable, *i. e.*, a permanent loan. The interest on the Danish national debt is paid regularly at the time when it is due.

By order of the minister of finance.

CAROC.

To the MINISTRY OF FOREIGN AFFAIRS.

NETHERLANDS.

Mr. Birney to Mr. Evarts.

No. 144.] LEGATION OF THE UNITED STATES,
The Hague, March 17, 1880.

SIR: I have the honor to acknowledge the receipt of your "special and separate" of the date of February 11, 1880, in which are set forth certain interrogatories to which the honorable the Secretary of the Treasury desires answers for the information of his department.

Immediately upon its reception I addressed a note to the minister of foreign affairs, making known the request and inclosing for him a copy of the "special." As the minister will refer my communication to the department of finance, some time will probably pass before I am favored with an answer. As delay may not be convenient to the honorable Secretary of the Treasury, I have concluded to give you such facts, imperfect though they may be, as I gathered when trying to obtain material for my answers to former dispatches.

So soon as the minister of finance shall reply, through the foreign office, to my note, I will transmit the correspondence, which no doubt will supply any omission in this communication.

To the sixth, asking statement of public debt, I reply that on 1st of January, 1880, there were outstanding in bonds, not redeemable, as follows:

f. 632,000,000, at 2½ per cent., making annual interest	f. 15,800,000
f. 91,000,000, at 3 per cent., making annual interest	2,740,000
f. 182,000,000, at 4 per cent., making annual interest	7,283,000
f. 37,000,000, at 4 per cent., making annual interest	1,476,000

Two years ago there was issued of redeemable bonds sold at 98, f. 10,626,000, at 3½ per cent., making annual interest, f. 375,000. Interest is not in default, the government paying punctually.

As to the present market value, that may be stated as follows:

On the 1st of January, 1880, those bonds paying 2½ per cent. were selling at	65⅝
3 per cent. were selling at	79
4 per cent. were selling at	102¾
4 per cent. (sold two years ago at 98)	102⅓
3½ per cent	95

The showing of the finance minister will be more complete.

I am, sir, your obedient servant,

JAMES BIRNEY.

Hon. WM. M. EVARTS,
Secretary of State.

Mr. Birney to Mr. Evarts.

No. 147.] LEGATION OF THE UNITED STATES,
The Hague, April 3, 1880.

SIR: Referring again to your "special and separate" of February 11, 1880, I have the honor to supplement my dispatch No. 144, of 16th ultimo, with the correspondence therein referred to, as not at that time complete.

I have just received the reply of the minister of foreign affairs to my note of 26th February last. I inclose a copy of his reply together with translation.

I am, sir, your obedient servant,

JAMES BIRNEY.

Hon. WM. M. EVERTS, *&c. &c. &c.*

Translation of letter of Minister of Foreign Affairs.

THE HAGUE, *March* 31, 1880.

Mr. MINISTER: In accordance with the desire expressed by his excellency the Secretary of State of the United States, in the circular-dispatch, a copy of which accompanied your note of the 26th of last February, I have the honor to send you the inclosed:

1. A note from the minister of finance containing the information requested by your

government on the subject of the laws relative to the fabrication of moneys and the issue of bank notes in force in the Netherlands; and

2. A statement of the public debt of the kingdom on the 1st of January last.

Be so kind, Mr. Minister, as to accept the renewed assurance of my high consideration.

VON LYNDEN VAN LANDENBURG.

Mr. JAMES BIRNEY, *&c.*, *&c.*, *&c.*

Translation of the note of the Minister of Finance accompanying the reply of the Minister of Foreign Affairs.

6. This question is answered by the statement hereto appended containing a *résumé* of the public debt as it was on the 1st January, 1880.

Statement of the Netherland public debt on the date of 1st January, 1880.

Denomination of the debt.	Their nominal amount.	Time of maturity.	Rate of interest.	Rate of issue.	Exchange or current value.
			P. cent.		
Enrollment; a register of national bonds.	f. 632, 088, 200	No time fixed for redemption.	2½	Cannot be given because these have originated from previous debts.	65¾
	91, 322, 700		3		78¾
	182, 075, 000		4		102 1/16
Redeemable bonds	10, 626, 000	f. 300,000 per year after their numbers are drawn.	3½	As above said.	95½
	36, 902, 900	Beginning with 1881, to be redeemed by lottery in 56 years.	4	98⅜ per cent.	102⅞

The enrollment of public bonds is in the name of proprietors, and they are transmitted by special power of attorney; the interest is paid semi-annually. There are also issued certificates of ownership in the name of certain trust companies. These certificates have coupons annexed for the interest to be paid by these companies.

No Netherland public debt has ever been in default for payment of interest.

SWITZERLAND.

[Inclosure to No. 273.—Translation.]

Mr. Welti to Mr. Fish.

BERNE, *May* 17, 1880.

Mr. FISH,

Chargé d'Affaires of the United States of America at Berne:

By his note of 28th February last, the chargé d'affaires of the United States of America (du Nord), addressed to the federal council various questions concerning coinage, bank-notes, and loans in Switzerland, requesting at the same time printed documents in regard thereto.

To reply as far as possible to the requests of the chargé d'affaires, the federal council has the honor to furnish him the following information:

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As to the sixth and last question, the federal council refers to the conversion, in a single loan at 4 per cent., of the three federal loans, which was effected in the commencement of the present year.* The message† and the prospectus‡ inclosed here-

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* See Mr. Fish's dispatch No. 243 and its inclosure.—TRANSLATOR.

† See inclosure 6 to Mr. Fish's No. 273.—TRANSLATOR.

‡ See inclosure 7.—TRANSLATOR.

with contain the necessary details concerning the emission, the refunding and nature of bonds.

The interest in arrear of the federal loans forms but a moderate sum; at the end of 1879 it was but 47,000 francs.

Always willing to furnish to the chargé d'affaires of the United States the information which may interest him, the federal council expresses its regret not to be able to furnish him in duplicate, for want of a sufficient supply, copies of all the printed documents above mentioned, and especially the monetary laws. It seizes this occasion to renew to him the assurances of its high consideration.

In the name of the federal council, the President of the confederation,

WELTI.

The chancellor of the confederation,

SCHIESS.

[Translation.]

Message of the council of the bund to the assembly of the bund, in relation to the conversion of the loans of the confederation, from the 12th of November, 1879.

SIRS: At the discussion of the law of the bund of June 20, 1879, in relation to an increase of import duties on certain kind of goods, the assembly of the bund issued two propositions, one of them as follows:

"The council of the bund is invited to submit at the next December session a report and resolution setting forth to what amount and in what manner the revenues resulting from the increase of import duties on tobacco and spirits should be applied to the paying off of the debt of the bund."

I. The debt of the confederation consists of three loans. The first was made in 1867, to the amount of 12 millions of francs, at 4½ per cent., to defray expenses of arming, &c., and for the re-establishing of the cash reserve of the treasury of the confederation. This loan shall, in accordance with resolution of December 22, 1866 (Off. Arch. IX, 15), be paid off within 25 years, say before the expiration of 1892, by annual installments gradually increasing.

The second loan, to the amount of 15,600,000 francs, was made as per resolution of February 3, 1871 (Off. Arch., X, 400), in 1870 and 1871, in consequence of the occupation of the frontier incident to the German-Franco war. This loan, also at 4½ per cent., is payable on or before the 31st of August, 1886.

The third loan, authorized June 23, 1877 (Off. Doc., new series, Vol. III, p. 120), of 6,000,000 francs, was to cover current deficits. It consists of about one-third of one year 4 per cent. treasury notes, and of two-thirds of 4½ per cent. three years' obligations, which mature on the 1st October next year.

The three loans amounted originally to 33,600,000 francs.

	Francs.
There was paid on the loan of 1867 in the years 1876, 1877, 1878, and 1879..	1,910,000
And there will also be paid by the end of the current year the amount of the treasury notes.....	2,100,000
Total.....	4,010,000

The debt of the loans of the confederation amount therefore to 29,590,000 francs, and, after deducting the amount of 550,000 francs for amortization, provided for in the estimates for the year 1880, say 29,000,000 francs, which, as stated before, mature at various times, and bear 4½ per cent. interest.

All the obligations can be called six months in advance; those of the loan of 1867 as per resolution of February 2, 1867, article 5; those of the loan of 1871 as per resolution of February 3, 1871, article 4. The loan of 1877 must be paid October 1, 1880.

In its message of June 5 last, relating to the increase of import duties on certain articles, the council of the bund has already called attention to the impracticability of paying off the loans to the full extent of the original programme.

The paying of the loan of 1867 requires annually, after 1881, over 500,000 francs. (The successively increasing installments will be equalized by the decrease of the interest charges, in consequence of the payments made on the principal of the debt.) Then the loan of 1871 requires annually 2,230,000 francs from 1881, in case the paying off shall be completed in 1886, and 3,900,000 francs have to be raised by October, next year, for the loan of 1877, unless an extension of the time takes place.

Besides the above enumerated indebtedness, there are the contributions of the bund to the Gotthard and Monte Cenere Railroads to the amount of 6,500,000 francs. If still more is required for other passes through the Alps, in conformity with the law of August 22, 1878 (Off. Doc., U. S. IV, 1), it has to be added, but is not now taken into consideration.

Considerable sums will be needed for an additional executive building and for the polytechnicum, and experience teaches that other expenses, at present not known, will have to be met.

In view of this state of the finances, the council of the bund thinks it advisable to regulate the liabilities of the confederation in such a manner that the three loans be consolidated into one uniform loan, and that the periods for the redemptions be reasonably extended; in support of which we submit the following: The (budget) estimates for the next year provide for interest on the loans 1,324,000 francs.

The payment on account of the principal of the debt to the amount of 550,000 francs is not taken into consideration here, as that item is otherwise accounted for. (Taken from the fund for amortization of debt.)

The present times are favorable for a reduction of the rate of interest.

Commerce and industries are more or less stagnant everywhere.

Large amounts of ready money are lying unemployed in banks.

Secure investments are universally looked for; in fact, the capital seeks employment, but does not find it sufficiently; hence, the continually depressed rate of interest and high quotations of all kinds of obligations offering full security.

The obligations of the confederation in particular enjoy the fullest confidence; their quotation is always above par, and there cannot be the least of doubt that obligations bearing 4 per cent. interest can easily be placed.

The objection, raised sometimes against the conversion, that many holders of bonds would be losing by it, they having paid high prices in expectation of the longer duration of the loan, does not seem to be well founded; inasmuch as the confederation draws by lottery annually a number of bonds for redemption, and as it was made optional at the time of the issue of the loans to anticipate the payment, the holders cannot be surprised by the calling in. Furthermore, the holders of the obligations will be conceded the preference of exchanging their 4½ per cent. securities into those of 4 per cent. However, it cannot be but desirable for the confederation to save annually, through the conversion of the loans, a considerable sum of the estimates, thereby aiding to establish a financial equilibrium.

For further information see the following table of a loan to be paid off in thirty-five years, and which we put at 35,000,000 francs, in view of the 6½ million francs Gotthard subvention which have to be paid within three years.

We put the amount of the loan at this figure (35 millions) because it covers all the now existing liabilities.

It does not seem advisable to issue a larger amount of obligations. It might cause a loss by paying interest on unemployed money.

Should several millions be needed in the next years for the above-mentioned purposes it will be easy to procure them by drawing on our bank deposits, which always amount from four to six millions, or we can get that amount by the issue of treasury notes.

We do not recommend a loan of a less amount, which probably would make it necessary for the administration to draw from the available funds mentioned in the foregoing.

Year.	Principal.	Interest.	Amortization. (Redemption of principal.)
	Francs.	*Francs.*	*Francs.*
First	35, 000, 000	1, 400, 000	475, 500
Second	34, 524, 500	1, 380, 980	494, 000
Third	34, 030, 500	1, 361, 220	514, 000
Fourth	33, 516, 500	1, 340, 660	534, 500
Fifth	32, 982, 000	1, 319, 280	556, 000
Sixth	32, 426, 000	1, 297, 040	578, 000
Seventh	31, 848, 000	1, 273, 920	601, 000
Eighth	31, 247, 000	1, 249, 880	625, 500
Ninth	30, 621, 500	1, 224, 860	650, 000
Tenth	29, 971, 500	1, 198, 860	676, 500
Eleventh	29, 295, 000	1, 171, 800	703, 500
Twelfth	28, 591, 500	1, 143, 660	731, 500
Thirteenth	27, 860, 000	1, 114, 400	761, 000
Fourteenth	27, 099, 000	1, 083, 960	791, 500
Fifteenth	26, 307, 500	1, 052, 300	823, 000
Sixteenth	25, 484, 500	1, 019, 380	855, 500
Seventeenth	24, 629, 000	985, 160	890, 000
Eighteenth	23, 739, 000	949, 560	925, 500
Nineteenth	22, 813, 500	912, 540	962, 500
Twentieth	21, 851, 000	874, 040	1, 001, 000
Twenty-first	20, 850, 000	834, 000	1, 041, 500
Twenty-second	19, 808, 500	792, 340	1, 083, 000
Twenty-third	18, 725, 500	749, 020	1, 126, 000
Twenty-fourth	17, 599, 500	703, 980	1, 171, 500
Twenty-fifth	16, 428, 000	657, 120	1, 218, 000
Twenty-sixth	15, 210, 000	608, 400	1, 267, 000

Year.	Principal.	Interest.	Amortization. (Redemption of principal.)
	Francs.	*Francs.*	*Francs.*
Twenty-seventh	13, 943, 000	557, 720	1, 317, 500
Twenty-eighth	12, 625, 500	505, 020	1, 370, 000
Twenty-ninth	11, 255, 500	450, 220	1, 426, 000
Thirtieth	9, 829, 500	393, 180	1, 482, 000
Thirty-first	8, 347, 500	333, 900	1, 541, 500
Thirty-second	6, 806, 000	272, 240	1, 603, 000
Thirty-third	5, 203, 000	208, 120	1, 667, 000
Thirty-fourth	3, 536, 000	141, 440	1, 735, 000
Thirty-fifth	1, 801, 000	72, 040	1, 801, 000
		30, 632, 240	35, 000, 000

Considering the condition of the finances of the bund, the council deems it necessary that a pretty long period for the paying off be chosen. This can, in our opinion, not have any disadvantageous influence upon the quotation at the time of placing the loan, because an obligation of the confederation is immediately well accredited and desired for permanent investments not only in Switzerland, but also in foreign countries. This is also a reason why the confederation should unhesitatingly convert its loans, and obtain at the same time an extension of the periods of paying, besides obtaining, in consequence of the present state of the money market, a reduction of the rate of interest.

II. The foregoing statements do not seem to leave any doubt that a conversion of the loans is justified.

It is now left to the council of the bund to report briefly on the result of it.

It is known that the fund for the amortization of the debt will be exhausted at the end of 1880, and from that time there must be provided for the paying of the loan of 1867 an amount of 550,000 francs. The loan of 1871 requires annually from and after next year an amount of 2,230,000 francs. (The loan of 1877 is here not taken into account as the time of payment must at any rate be deferred.) Making a total of 2,780,000 francs to be permanently added to the annual estimates for the amortization of the loans.

There is required at present for interest in all 1,324,000 francs, and the conversion in the meaning of our prospectus will require, in round figures, 1,875,000 francs.

Some banking institutions have offered to take a loan of 3 per cent. obligations at from 78 to 80 per cent.

Though this appears financially a little more favorable than a loan of 4 per cent. at par, the council feels nevertheless disposed to give the preference to a loan at 4 per cent.

The rate of 4 per cent. is undoubtedly preferred in our country to that of 3 per cent., notwithstanding the lower quotation.

The difference in the quotations is not sufficiently considered, and it is subject to constant fluctuations.

Besides, a 3 per cent. loan would require for 35,000,000 francs a sum of 45,000,000 francs to be issued, and it could be often misunderstood and misinterpreted should the nominal amount of the debt be increased ten millions.

Furthermore, it is believed that the 4 per cent. obligations will be taken much less outside of the country, as would be the case with the 3 per cent., which could be sold with profit in France, the French 3 per cent. consols being quoted at present 82 to 83 per cent. But it appears to us politically preferable to find a market for the 4 per cent. principally in our own country.

We put the time during which the amortization comes to a close at 35 years, which will require an annual amount of 1,875,000 francs for interest and gradual redemption of the principal. For this purpose it is estimated that in future instead of 4,104,000 francs only 1,875,000 francs will be required, making an annual reduction of the estimates of 2,229,000 francs.

The estimates for future interest and amortization amount to 551,000 francs over and above the estimates for the next year (1880). The increased revenues from import duties will furnish the means for this excess.

Based upon the foregoing statements the council of the bund has the honor to submit to the high assembly of the bund the following draft of a resolution.

Accept, gentlemen, the assurance of our perfect consideration.

Berne, November 12, 1879.

In the name of the Swiss council of the bund.

The president of the bund.

HAMMER.

The chancellor of the confederation.

SCHIESS.

Resolution of the Bund concerning the conversion of the loans of the Confederation.

The assembly of the bund of the Swiss Confederation, after having duly considered a message of the council of the bund dated November 12, 1879,

RESOLVES:

ART. 1. For the purpose of redeeming the loans of the confederation contracted in the years of 1867, 1871, and 1877, and for paying certain other liabilities, the council of the bund is authorized to contract a new loan at 4 per cent., not to exceed 35,000,000 francs.

ART. 2. The payment of the interest and the paying of the principal shall take place in such a manner that the whole loan of 1881 be entirely paid off within thirty-five years at the latest.

ART. 3. The council of the bund fixes the rate of emission, and will take proper measures that the stipulations of the loan be strictly adhered to.

ART. 4. The council of the bund is intrusted with the execution of this resolution.

[Translation.]

Loan of the Swiss Confederation of 35,000,000 *francs and calling of the old loans.*

Annual interest, 4 per cent., payable semi-annually on the 30th of June and 31st of December; to be paid off in thirty-five years from 1881.

In obedience to the resolution of the bund, dated December 20, 1879, the council of the bund invites public subscriptions to a loan of 35,000,000 francs, the proceeds of which shall be applied as follows:

A.

	Francs.
For the payment of the balance of the 4½ per cent. loan of 1867, amounting to	9,540,000
For the payment of the 4½ per cent. loan of 1871, amounting to	15,600,000
For the payment of the balance of the 4½ per cent. loan of 1877, amounting to	3,900,000
Total	29,040,000

B.

For the liquidation of other liabilities.

The two former loans are herewith called, in accordance with resolutions of the council of the bund of May 22, 1867, and February 3, 1871; the first to become due July 31, 1880, and the other August 31, 1880.

The payment will take place at the times specified in article 7, after which the debts of the confederation will have been extinguished except the present loan.

Subscriptions are received from January 21 to February 5 next at the institutions and banking-houses named hereafter, and on the following conditions:

ART. 1. The loan of 35,000,000 francs will be issued in bonds of 500 francs, 1,000 francs, 5,000 francs, and 10,000 francs, and payable to bearer; however, if desired, those of 5,000 francs and 10,000 francs can be registered.

ART. 2. The bonds bear interest at 4 per cent. per annum, with coupons attached, payable June 30 and December 31, the first of which becomes due December 31, 1880.

ART. 3. The bonds are payable within thirty-five years at the latest, say, from 1881 to 1915, in accordance with a plan of amortization attached to the securities, though the confederation reserves to itself the right to redeem, from and after 1887, in larger amounts than provided for in the plan of amortization.

ART. 4. Payment of principal and interest is made free of expenses at the treasury of the confederation at Berne, and also at all the principal custom-houses and the district post-offices.

ART. 5. The rate of emission is fixed at 99¼ per cent. The payments for the subscriptions have to be made on or before June 30, 1880. The subscribers have the privilege, however, after *pro rata* distribution is made, to pay their share at any time in full or in part, in which case interest will be allowed them from the day of payment to June 30, and a certificate for the interim will be issued. Part payments on single obligations are not admissible.

ART. 6. The holders of obligations of the loans of 1867, 1871, and 1877 shall have a preference in subscribing for the new loan; only, however, to the amount of the nominal value of their old bonds, and at the rate given in article 5; that is to say, 100 francs will be accounted to them for 99½ francs. For this purpose they should present their bonds on or before February 5 next, at one of the designated places of subscriptions where the bonds will be stamped.

ART. 7. All the bonds which shall not be recorded for conversion within the prescribed time will be paid at maturity, with the semi-annual coupon as follows: Of the loan of 1867, July 31, 1880; of the loan of 1871, August 31, 1880; of the loan of 1877, October 1, 1880.

ART. 8. The exchange of the converted obligations will take place at the dates given in article 7. At the same time the difference of the rate of ½ per cent. and the maturing 4½ per cent. coupon will be paid, deducting the interest from June 30 to the respective dates on the new 4 per cent. obligations.

ART. 9. Should the conversion, together with the new subscriptions, exceed the sum of 35,000,000 francs, then the reduction will be confined to the new subscriptions, and the *modus operandi* will be decided by the finance department.

ART. 10. All the publications referring to the paying of interest and principal are to be published in the gazette of the bund, and in a newspaper at each Basle, Bellinzona, Berne, Geneva, Lausanne, Neufchatel, St. Gallen, and Zurich.

Berne, the 9th of January, 1880.

Finance department of the confederation.

HAMMER.

ITALY.

Mr. Marsh to Mr. Evarts.

LEGATION OF THE UNITED STATES,
Rome, April 6, 1880.

SIR: I have the honor to transmit to you herewith a copy and translation of a report from the Italian ministry of finance, in answer to the interrogations contained in your instruction marked "Special and separate" of February 11, 1880.

The printed documents referred to in this report will be forwarded by to-day's mail.

I am, &c.,

GEORGE P. MARSH.

Hon. WILLIAM M. EVARTS,
Secretary of State.

[Translation of a memorial accompanying a note from the Italian ministry of foreign affairs, dated March 31, 1880, for inclosure in dispatch No. 879.]

Statement from the Italian ministry of the treasury, in reply to certain interrogations from the legation of the United States at Rome.

* * * * * * *

C.—DEBT OF THE STATE.

It now remains to give an indication of the debts of the Italian States.

More complete and synthetical information of the nature, kind, consistency, and duration of these debts could not be furnished than that given in the report published by the ministry of the treasury; and, therefore, the undersigned refers, on this point, to that report which is contained on page 38 and those following, of the aforementioned statistical part of the Annuario delle Finanze for the year 1879.

It is to be observed that this reports the situation up to the 1st of January, 1879. However, the publication will soon be made of the Annuario delle Finanze for the year 1880, in which the situation will be brought up to the 1st of January of the present year.

The undersigned reports that he cannot reply to the questions of the Government of the United States about the price of emission of the different loans and what has been realized from them by the Italian Government, because, apart from special considerations for reserve, which will readily be apperciated by the minister of the United States, it must be remarked that manifold is the kind and origin of all the debts now charged upon the budget of the state, a large part of which is derived from the unification of the debts of the former States of the peninsula, and a large part fastened upon the

government by conventions and by the buying up of concessions to private societies ties or by force of pre-existing governation guarantees.

For the same reason the undersigned can say nothing on the subject of the actual market price of state obligations, for that cannot be gathered except from the stock lists of the many chambers of commerce in the kingdom. In any case, it should be observed that with the exception of the consolidated funds, whose quotation is, it may be said, general, of all other funds which have special origin and existence, the quotation is localized in a few places, or even in one place, and to obtain the quotation of others it would be necessary to refer to the prices regulating foreign markets.

For the minister.

ACERBONI.

TURKEY.

No. 361.] LEGATION OF THE UNITED STATES,
Constantinople, December 2, 1879.

SIR: I had the honor, in my dispatch No. 36, of November 15, 1875, to discuss at some length the financial affairs of the Ottoman Government, brought to my notice officially by the Sublime Porte. Although alluded to repeatedly since, I have not had the subject so presented that it seemed necessary to treat it formally. This morning, however, I have a note from his excellency the minister of foreign affairs, which I am requested to bring to the attention of our countrymen at home and abroad, and which, with its inclosures, is transmitted.

The decree of October 6, 1875, suspending for five years the payment in money of one-half the accruing interest on the public debt, and promising for the other half debentures bearing interest at five per cent., proved highly disastrous to the grand vizier who promulgated it (dispatch No. 322, of July 7, 1879), and had much to do in hastening the downfall of his imperial master. Yet from that day to this no interest has been paid, either in debentures or in money, and the daily quotations of the Turkish securities, both here and in London and Paris, scarcely exceed one-half the accumulated arrears.

The operations of the imperial treasury meanwhile have been a series of temporary expedients to relieve for the moment against ever-increasing embarrassments. Debts, except unavoidable payments, are left to the care of the future. Official salaries are greatly behind and the pay of the army and navy, even the daily supplies for the soldiers, are difficult to procure. Small sums of money, a few thousands, hundreds it may be, are a subject of negotiation. Impecuniosity is stamped upon every department of the government. The financial question subordinates all others; or rather the others, and especially the question of reforms, are subsidiary to it. The situation will be made more fully to appear by inclosing paragraphs from the press.

The Turks, in their fiscal troubles, have not lacked for abundant counsel. During the last four years there have come numerous advisers, self-appointed for the most part, with schemes of the panacea order, for the rehabilitation of the Ottoman treasury. They have been received graciously, listened to attentively, entertained hospitably, and sent away loaded with promises, sometimes with a present or two. But as the plans of one side looked to the outstretched hands of the creditors, while the other side were thinking of their own empty stomachs and emptier pockets, nothing ever ripened. Experience pointed the divan to a foreign loan as the readiest way to replenish an exhausted treasury. Such a loan guaranteed by the great powers, or by one of them, could not fail of success, ample for domestic wants, and a small percentage for distribution among the creditors. Failing this, small sums have been borrowed from time to time of the Galata bankers, whose names appear in the recent transactions, and secured by a pledge of the different revenues. Such loans are simply ruinous; to the Turks if they are repaid, to the bankers if they are not. The new agreement, if I comprehend its scope, embodies a series of dealings and gives more satisfactory security to the bankers; and at the same time relieves the custom-house of certain incumbrances and turns its proceeds into the public treasury. This source, though constant, is small. The duties are nominally 8 per cent. A gentleman having the best possible means of knowing recently assured me they do not exceed three per cent., and that brokers would undertake for three per cent. to secure the delivery of goods.

Efforts have been made to place the collection of the customs revenues, as well as of the others, in the hands of a commission of foreigners. This proposal the Turks resist if they do not resent, and, I am persuaded, they will never submit to it except as the last resort of despair.

* * * * * * *

I am, sir, etc., HORACE MAYNARD.

Hon. WILLIAM M. EVARTS,
Secretary of State, Washington, D. C.

[Translation.]

SUBLIME PORTE, MINISTRY OF FOREIGN AFFAIRS,
December 1, 1879.

SIR: With the double object of meeting the pressing demands upon the imperial treasury and of resuming as far as possible the payment of the interest on the public debt, domestic and foreign, and in conformity to the positive wish of His Imperial Majesty, the Sultan, the Sublime Porte has just taken the following measures:

1. An arrangement has been made between the state, the Ottoman bank, and other bankers in relation to the collection, the administration, and appropriation of the revenues from certain branches of the excise.

2. The Sublime Porte has made a decree which does not ask the holders of the securities of the public debt, domestic and foreign, to give up any of their rights, but guarantees to them a fixed annual amount, which will be sensibly increased at no distant date.

These two acts, which give force to each other, being naturally interesting to a great number of foreigners, I have the honor to communicate a copy of them to you herewith, and request you to bring them to the knowledge of your countrymen, both in the empire and abroad.

Accept, sir, the assurance of my very distinguished consideration.

SAWAS.

Mr. MAYNARD,
Minister Resident of the United States of America, &c.

DECREE.

The Imperial Ottoman Government having resolved to resume, so far as its present resources permit, the service of the public debt, both internal and external, decree:

ART. I. From the 1st of January (old style), 1880, an annuity of £ T. 1,350,000 is set apart for the service of the internal and external public debt.

ART. II. This annuity will be devoted to the payment of a half-yearly interest on the nominal amount of the bonds. The first payment will take place on the 1st of July (old style), 1880.

ART. III. The annuity of £ T. 1,350,000 is assured and secured as follows:

1º. By the stipulations of a convention passed this day between the Imperial Ottoman Government, on the one part, and the Imperial Ottoman Bank, Messrs. Foster, Deveaux, Von Haas, G. Zarife, Solomon Fernandez, Bernard Tubini, E. Eugenidis, T. Mavrogordato, Vlasto, Barker, Stefanovich, Leonidas Zarife, and G. Coronio, on the other part. According to these stipulations the net annual revenue of the monopolies and imposts on tobacco, salt, spirits, stamps, silk, and fish, subject to a deduction of £ T. 1,100,000, will belong to the bondholders, and will be paid over to their representatives through the medium of the Imperial Ottoman Bank.

2º. By the annual revenue of the Island of Cyprus and of Eastern Roumelia, which is, from this day, and in virtue of the present decree, integrally made over to the bondholders for a term of ten years. The whole up to the sum of 1,350,000 Turkish liras. But if the whole should prove less than that sum, the annuity will be made good by means of the supplementary guarantees set forth below in Article IV, and, in case of need, by other resources of the imperial treasury.

ART. IV. Independently of the annuity of £ T. 1,350,000, constituted as above, the Imperial Government irrevocably assigns from this day forward to the bondholders of the internal and external public debt:

1º. The tribute of the principality of Bulgaria, and any sum of money which may come into the hands of the Imperial Government as the contributive part of Servia, Montenegro, and Bulgaria to the Ottoman debt.

2º. The third part of the net proceeds of any new tax which may be hereafter ordained.

3º. The third part of the proceeds of any increase in the custom-house revenues, resulting from a revision of existing commercial treaties.

4º. The amount of the difference between the proceeds of the existing tax, called *temetton*, and those of the *Patente*, as soon as the law of licenses (loi de Patente) comes into operation. The proceeds of these four assignments will serve, in the first place, to complete in case of need the fixed annuity of £ T. 1,350,000, and, in the second place, to constitute a supplementary annuity for the internal and external debt.

ART. V. The Imperial Government will determine in a special regulation, which will be prepared in concert with the representatives of bondholders:

1º. The mode of repartition of the fixed annuity of £ T. 1,350,000, as well as of the supplementary annuities between the different categories of bondholders of the internal and external public debt.

2°. The mode of paying over the annuity and of establishing the half-yearly distribution of it.

ART. VI. The operation of the present decree is limited to ten years, at the expiration of which a new decree will fix the definitive conditions of the interest and sinking fund of the internal and external public debt.

The present decree, having only a provisional character, does not prejudice the rights of bondholders.

The Imperial Government formally places itself under prohibition to suspend or modify, until after the expiration of the tenth year, the ordinances of the present decree, except with the consent and co-operation of the bondholders of the internal and external debt.

Sublime Porte 10–22, November, 1879.

(From the Moniteur du Commerce of November 26, 1879.)

Text of the document.

The convention between the Imperial Ottoman Government, represented by the premier, his highness Said Pasha, and the minister of finance, his excellency Edib Effendi, acting both in pursuance of the imperial *iradé*, dated 7 Zilhidjé, 1296 (November 10, 1879, old style), on the one part, and Mr. M. H. Foster, Mr. Emile Deveaux, and Mr. J. von Haas, acting for the Imperial Ottoman Bank and group; Mr. George Zarife, Mr. Solomon Fernandez, Mr Bernard Tubini, Mr. Eustace Eugenidis, Mr. Theodore Mavrocordato, Mr. A. Vlasto, Mr. A. Barker, Mr. Z. Stefanovitch, Mr. Leonidas Zarife, Mr. George Coronio, Mr. Ulysses Negroponitis, and Mr. Paul Stefanovitch Schilizzi on the other part.

The following convention has been signed:

ART. 1. The Imperial Government leases to Messrs. H. Foster, Emile Deveaux, J. von Haas, George Zarife, Solomon Fernandez, Bernard Tubini, Eustace Eugenidis, Theodore Mavrocordato, A. Vlasto, A. Barker, Z. Stefanovitch, Leonidas Zarife, George Coronio, Ulysses Negroponitis, and Paul Stefanovitch Schilizzi, who accept it for the term of ten years, beginning on January 1–13, 1880, and ending on January 1–13, 1890, the collection of the stamp-tax (*Varakai sahiha*) and of the spirit tax (*miriyé and rouhsatiyé*) of the Ottoman Empire's vilayets mentioned in the annexed list, with the exception of customs dues levied on spirits; of the fish-tax of Constantinople and suburbs, conformably to details given in list which relates to it; and of the silk tithe of the districts of Constantinople, Adrianople, Broussa, and Samsoun, conformably to details given in list which relates to it, with the exception of customs dues levied on silks.

ART. 2. The annual price of rent-charge, for the whole duration of the lease, shall be equal to the net revenue in beshlik or metallic, of the four above-mentioned taxes plus 10 per cent. This net revenue will be shown on the 1–13 August next, by the receipts in beshlik and metallic, after the sum representing the general charge of collection applicable to these four taxes has been deducted. The price of the lease will be paid in beshlik and metallic by the contractors of the second category in twelfth monthly installments in arrears. All surplus of net receipts on the price of lease will be equally shared between the state and contractors.

ART. 3. The four taxes given in lease will be collected according to the existing tariffs and regulations relating to them, and they shall not be modified except by the mutual consent of both contracting parties. The necessary movable stamps and stamped paper will be struck and supplied by the government to the contractors under their own superintendence and at their own expense. In the intervals of stamping, the machines and instruments used for that purpose will be locked up and one key of the safe will remain with the government and another with the contractors. On the expiration of the lease all documents which might happen to be in the hands of the contractors will be returned by them to the government. The Imperial Government, in conformity with the existing regulations, will lend their assistance to the contractors for the collection of the above taxes, and will also take into consideration any proposition which may be made by the contractors with a view to assuring the strict application of existing regulations, or for introducing any modifications which may be deemed necessary in order to improve the mode of collection of these taxes.

ART. 4. Comptrollers appointed by the Porte will be intrusted with the superintendence of the administration of the above taxes on behalf of the state. These comptrollers will examine the books, but will not be authorized to interfere with the administration of the lessees. The contractors reserve for themselves the right of establishing a company for the working of the four taxes lease, or the transfer of this lease to a third party; but in either case they will always be directly responsible towards the Imperial Government.

ART. 5. The Imperial Government gives over for a period of ten years, beginning on the 1-13 January, 1880, to the contractors mentioned in article 1, the administration of the monopoly of salt and tobaccos produced or consumed in the *vilayets* of the empire which are enumerated in the annexed list, with the exception of the tobacco tithe. The state will exercise a control over this administration by means of inspectors appointed by it and sanctioned by the administrators. These inspectors will have a right to examine the books and cash of the said monopolies, but on no account to interfere with their administration.

ART. 6. The modifications which the government or the second contractors may think fit to make in the regulations of either of these monopolies will be agreed upon by common consent.

ART. 7. The police and superintending department, both for the leased taxes and the monopolies administered by the contractors, will be confided to the government staff. The second contractors have a right to lay before the government any cause for complaint which they might chance to have concerning the incapacity or insufficiency of this staff, and the government faithfully promises to take into serious consideration any such observations. All the salaries of the staff, as well as all the expenses of the offices established in the interior and on the coast, and exclusively applied to the collection of the six taxes, will be paid out of the produce of these taxes, according to the expenses incurred by each of these offices. As regards the expenses and salaries, both on the coast and frontiers, of the custom-house inspectors and preventive officers, intrusted with the superintendence of custom duties and of the aforesaid taxes, they will be laid to the charge of the custom-house and six-tax administration, in the proportion of 55 per cent. for the six-tax and 45 per cent. for customs administration. The contractors reserve for themselves the right of employing secret inspectors, whose mission it will be to inform them of any fraud which they might chance to discover concerning the taxes or the monopoly of tobaccos and salt. In conformity with existing regulations, these inspectors will receive their share on fines and double duties paid by offenders. The imperial government undertakes that such frauds shall be punished, as soon as they are brought under its notice, according to existing laws and the gravity of the offense.

ART. 8. The annual revenue of the lease of the four taxes, as well as the net revenue of the monopoly of salt and tobaccos, will invariably be employed in the following manner:

1°. The second contractors will deduct, from the receipts of every quarter the sum of two hundred and seventy-five thousand Turkish liras, which will be applied to the reimbursement, interest, and capital, of the following debts:

Rough estimate of Mr. G. Zarifes' debt, with interests guaranteed by the customs, on the 1-13 January, 1880	£ T. 690,000
Rough estimate of Messrs. Solomon Fernandez, Alfred Barker, and their co-contractors' debt, with interest, proceeding from bills issued on the customs, on the 1-13 January, 1880	1,800,090
Rough estimate of the Imperial Ottoman Bank's debt, with interest guaranteed by the indirect taxes, and forming part of the sum of £ T. 1,080,000, advanced by the said bank, on the 1-13 January, 1880.	860,000
Rough estimate of the surplus of the statutory current account of the Imperial Ottoman Bank, with interest, on the 1-13 January, 1880...	1,750,000
Rough estimate of the Imperial Ottoman Bank's debt, with interest, proceeding from the great unified advances, on the 1-13 January, 1880	3,625,000
Total	8,725,000

all which debts will, from the 1-13 January, 1880, bear an interest of 8 per cent. per annum. This sum of £ T. 275,000 will be allotted to the payment of the above-mentioned debts according to the agreement passed between the owners of the said debts. This quarterly deduction of £ T. 275,000 once made, the surplus will belong to the bondholders of the internal and external public debt, and be deposited by the second contractors, through the Imperial Ottoman Bank, into the hands of the representatives of the said bondholders elected by the Imperial Ottoman Government. In this sum the revenues of Cyprus and Eastern Roumelia will also be comprised to the amount of one million three hundred and fifty thousand Turkish liras, total amount of the annuity to be applied to the public debt service, by an imperial decree under date of this day. It is also explained that the payment of the Cyprus and Eastern Roumelian revenues to the bondholders will be subjected to the cashing of these revenues.

ART. 9. Should the imperial government increase the existing duties for the collection of the four taxes now leased, all the surplus arising of this increase, as compared with the produce of the year preceding such increase, will belong to the government, after a deduction of 10 per cent. for costs of collection.

ART. 10. The accounts and deductions mentioned in article 8 will be made at the end

of each quarter, after passing to the treasury's credit the return interests which accrue to it, at the rate of 8 per cent. per annum on the monthly receipts of the four taxes mentioned in article 2. The second contractors will equally pass to the credit of the treasury a return interest at the same rate of 8 per cent. per annum, deducted every fortnight from the receipts of the monopoly of tobaccos and salt until such time as the quarterly sum of £ T. 275,000 be complete. The conversion into Turkish liras of the moneys proceeding from the lease of the four taxes will be made at the end of each month, and that of the moneys proceeding from the administration of the two taxes every fortnight, by the second contractors, together with the imperial treasury. The Imperial Ottoman Bank, in union with the imperial treasury, and for the best of its interests, will buy bills for the amount of balance of receipts, which will have to be given over to the said bank, agreeably to article 8, for the service of the public debt. At the expiration of the fourth quarter of annual receipts and expenditure, should the total net amount of receipts exceed the sum of two millions four hundred and fifty thousand Turkish liras, including the revenues of Cyprus and Eastern Roumelia, this surplus will be passed to the credit of the imperial treasury.

ART. 11. Should the debts mentioned in article 8 not be integrally reimbursed, interest and capital, at the expiration of the ten years, *i. e.*, on the 1–13 January, 1890, all the stipulations of the present convention will remain in force until the complete extinction of the said debts, with the exception of the annual price of the lease which will be established without majoration, on the basis of the net produce of the four taxes for the last year.

ART. 12. All the stipulations of the present convention, and those especially which concern the lease of the four taxes, the administration of the monopoly of salts and tobaccos, and the appropriation of their produce for the reimbursement of sums due by the imperial government, are, according to article 8, irrevocable and incommutable except in the case foreseen by article 13, and cannot be modified or broken, under what circumstances soever and for what cause soever it may be. Owing to this formal condition and to the present convention, the revenues of the general administration of the excise, with the exception of those which form the object of the present arrangement, will, from the 1–13 January, 1880, be entirely disengaged and returned free to the imperial government. The contractors of the advance £ T. 1,660,000 concluded by contract under date of November 20 (December 2), 1878, engaged to deposit on 1–13 January, 1880, at the Imperial Ottoman Bank, in packets sealed by the two parties and previously examined by the treasury, the totality of the bills issued on the general administration of customs and indirect taxes. These bills, on account of the £ T. 1,800,000, mentioned in article VIII *au fur et à mesure*, as proportional reimbursements are effected, will be, according to the present convention, freed and restored to the imperial government by the State Bank in presence of the two parties, and in proportion with the amount of each reimbursement when effected. The Imperial Ottoman Bank will be equally obliged to return, under the same date, to the imperial government, the *caïmé*, forming security for the great unified advances, in order that it should be annulled and incinerated.

ART. 13. The imperial government, in derogation from the preceding article, reserves for itself the right of canceling before the expiration of the ten years the stipulations of the present convention under the two following essential and peremptory conditions: 1°. In case the debts mentioned in article 8, capital and interest, are integrally reimbursed. 2°. In case a new regulation more advantageous to the bondholders of the interior and exterior public debt than the present arrangements resulting from the present convention, as well as from an imperial decree under date of this day, intervenes between the imperial government and the above-mentioned bondholders. Should these two conditions be fulfilled, the present condition would be canceled. It remains understood that should this canceling take place during the course of a year, the stipulations of the present convention with respect to the lease of the four taxes would hold good until the end of the month of December of the same year. Should this contingency come to pass the imperial government engages to pay to the above contracting parties:

1°. An indemnity for the current salaries of officers engaged by unexpired contracts.

2°. All other extraordinary expenses shown by regular documents. It is, however, stipulated that this payment shall not exceed the 3 per cent. once paid of the lease price of one year alone.

ART. 14. Should any difference arise between the government and the contractors relative to the interpretation or carrying out of the present convention it would be submitted to the decision of four arbitrators appointed by each of the parties, and, should it be necessary, a fifth arbitrator would be elected. The decision by arbitration would be irrevocable and without appeal.

ART. 15. The present convention will be communicated by the Sublime Porte to the foreign embassies at Constantinople.

Signed in duplicate at Constantinople, 7 Zilhidjé, 1296, *i. e.*, 10–22 of November, one thousand eight hundred and seventy-nine.

ADDITIONAL ARTICLE. Agreeably to the stipulations of article 5 of the present convention, the second contractors engage that the salt mines and government salt depots will permanently provide the public with the quantity of salt necessary for its consummation in such a way that merchants, local corporations, and every one in fact, who apply to these depots and salt works, shall always be amply provided for. This, however, is subjected to a case of *force majeure*, which might prevent the production of salt or destroy its existing quantity.

DEPARTMENT OF STATE,
Washington, May 7, 1880.

SIR: I have the honor to transmit herewith, for your perusal, a report on the finances of Turkey, arranged in the form of answers to interrogatories received in dispatch No. 8 from the legation at Constantinople.

I have the honor to be, sir, your obedient servant,

WM. M. EVARTS.

The Hon. JOHN SHERMAN,
Secretary of the Treasury.

Inclosure: The above-mentioned report.

SIXTH QUESTION.

Statement of the indebtedness of the country, showing—

a. Character and amount of the obligation.

b. Date of maturity.

c. Rate of interest.

d. If interest is in default, for how long; also amount unpaid.

e. When and at what rate issued (giving information, if obtainable, as to amount actually realized by government for bonds).

f. Present market value, exclusive of accrued interest.

The country is still suffering from the disastrous consequences of the late war. Its debt may be separated in two distinct parts.

1st. The foreign debt, represented by the bonds of the various loans, made mainly abroad (see following table).

2d. The home debt, comprising—

(*a.*) The engagements of the government to the financial establishments of Constantinople. These engagements have been settled in a large part by the convention of the 10–22 November, 1879, which gives to these establishments, for the space of ten years, the revenues of the stamp, liquor, and fishery taxes, of the silks of Constantinople, and of the salt and tobacco taxes—and which, in addition, stipulates in favor of holders of bonds of the foreign debt a small interest of ½ per cent. per annum. The following is the list of the loans comprised in the above-mentioned convention:

Divers bankers' loans negotiated by Mr. G. Zarife	£ T. 690,000 1,800,000
Divers bankers' loans negotiated by the Imperial Ottoman Bank	860,000 1,750,000
Large loans	3,625,000
	£ T. 8,725,000

6. The obligations of the Imperial Government to its contractors and the arrears of pay and salaries. The total amount of these obligations may be estimated at about T. £12,000,000.

State of the public debt of the Ottoman Empire, end of October, 1879.

Designation of the loan.	Date of issue.	Rate of issue.	Original nominal capital in pounds sterling.	Capital to pay off in pounds sterling.	Interest fallen due, bonds paid, and premiums issued not paid.	Total of the sums due, the end of October, 1879.
Loan, 6 per cent., 1854	1854	80	3,000,000	1,475,600		1,475,600 00
Loan, 4 per cent., 1855	1855	102⅝	5,000,000	3,401,600		3,401,600 00
Loan, 6 per cent., 1871	1871	73	5,700,000	5,135,860		5,135,860 00
Loan, 5 per cent., defense	1877	54	5,000,000	4,900,000		4,900,000 00
Loan, 6 per cent., 1858	1858	80	5,000,000	3,160,900	1,383,306 00	4,544,206 00
Loan, 6 per cent., 1860, fr. 50,930,500, @ 25	1860	62½	2,037,220	1,490,700	520,310 16	2,011,010 16
Loan, 6 per cent., 1862	1862	68	8,000,000	3,593,900	2,400,040 00	5,993,940 00
Loan, 6 per cent., 1863, fr.150,000,000, @ 25	1863	71	6,000,000	2,862,500	1,797,892 10	4,660,392 10
Loan, 6 per cent., 1864, fr. 50,000,000, @ 25	1864	71	2,000,000	963,500	605,692 10	1,569,192 10
Loan, 6 per cent., 1865, fr.150,000,000, @ 25	1865	66	6,000,000	3,022,000	1,898,642 10	4,920,642 10
Loan, 6 per cent., 1869, fr.555,555,500, @ 25	1869	61	22,222,220	19,242,500	6,222,320 00	25,464,820 00
Loan, 6 per cent., 1873	1873	58½	27,777,780	25,806,680	7,853,665 08	33,660,345 08
3 per cent. bonds of Roumelian Railroad, of fr. 792,000,000, @ 25	1870	45	31,680,000	31,345,600	4,530,268 00	35,875,868 00
General debt, 5 per cent	Divers	45	95,793,078	95,793,078	14,273,959 00	110,067,037 03
Approximate amount of floating debt			25,000,000	25,000,000		25,000,000 00
Totals			250,210,298	227,194,418	41,486,096 14	268,680,514 17

EGYPT.

No. 426.] UNITED STATES AGENCY AND CONSULATE-GENERAL,
Cairo, July 7th, 1880.

SIR: Referring to my dispatch, No. 406, of the 2d ultimo, I have the honor to inform you that I have received from the Egyptian Government such information as it is able to give touching the interrogatories contained in your circulars of February 11 and April 30, 1880.

* * * * * * *

SIXTH INTERROGATORY.

According to the statement of the government, the consolidated Egyptian debt on the 31st day of December last was as follows:

	Pounds sterling.
Unified debt	56,085,000
Privileged debt	16,886,000
Loan of 1864	299,700
Loan of 1865	515,900
Loan of 1867	653,000
Domanial, or Rothschild loan	8,500,000
Debt Dairah Saniah	8,815,500
Debt Dairah Khassah	697,500
Total	92,452,600

The floating debt, over and above balance of the proceeds of the Rothschild loan unexpended, was estimated on the 31st of December, 1879, at £5,000,000. The estimated amount of the floating debt was probably, at least, 2,500,000 pounds sterling too low; therefore the debt of Egypt 1st of January, 1880, was not less than 99,952,600 pounds sterling, or in round numbers 100,000,000 pounds sterling. In addition to the payment of interest on this sum, Egypt has to pay annually the following amounts:

	Pounds sterling.
To England on account of interest on purchase money of Suez Canal shares	200,000
To Turkey, tribute	680,486
Interest on account of bonus given to the Dairah Saniah creditors	50,000
Mecca pilgrims caravans and expenses of transportation of pilgrims	50,000
Total	980,486

This is nearly equal to the interest, at 5 per centum on an additional sum of 20,000,000 pounds sterling.

Egypt is also indebted to its own inhabitants in the sum of 17,000,000 pounds sterling on account of taxes paid in advance under what is called the law of the Monkabalah. (See my commercial report for 1879.)

Rates of interest and dates of maturity of debts.

UNIFIED DEBT.

These obligations were issued in 1876, payable in sixty-five years, with interest, payable semi-annually on the 1st days of May and November, at the rate of 7 per cent. per annum, 1 per cent of which was, however, applied to a sinking fund.

Special revenues were pledged for the payment of this interest, and in case of a deficit the government agreed to pay the deficiency from its general revenues.

The full amount of this interest was paid up to May 1, 1879, when only two and a half per cent. of three and a half was paid. On the 1st days of November and May following, the amount of the payments was reduced to 2 per cent.

It is the intention to permanently reduce the interest on these bonds to 4 per cent. per annum, and the arrears of interest will not probably be paid.

Since the failure to pay in full, the whole amount paid has been applied on the coupons, and therefore there has been nothing to use in extinguishing the debt.

PRIVILEGED DEBT.

The bonds constituting this debt also issued in 1876 bearing interest at 5 per cent. per annum, payable semi-annually on the 15th days of April and October. This interest is secured by the revenues of all the Egyptian railways and of the Port of Alexandria, and in case of deficiency, the government agreed to pay it and to give to this debt priority over all other debts of the state.

LOANS OF 1864, 1865, AND 1867.

The loans of 1864 and 1865 bear interest at the rate of 7 per cent., and that of 1867 at the rate of 9 per cent. They were payable in 1880, 1881, and 1882. But the abolition of the law of the Monkabalah (see my commercial report for 1879) will probably necessitate the postponement of their payment.

ROTHSCHILD LOAN.

This loan was made in 1878, and is secured by a mortgage on 425,000 acres of agricultural lands and certain other real estate given to the State by Ismail Pasha, the ex-Khedive, and the members of his family. The bonds were issued at 73 cents on the dollar, and about 2½ per cent. was given for negotiating the loan.

DARIAH SANIAH.

These bonds were issued by the Khedive in 1877 to secure his private debts; their minimum interest is 5 per cent., which may be increased to 7 per cent. if the revenues of the mortgaged lands are sufficient to pay that rate. There are 325,000 acres of these lands, and they embrace nearly all the sugar-cane plantations of Egypt with their sugar factories. The ex-Khedive gave these lands to Egypt, subject to the mortgage of the Dariah Saniah loan. The interest on all these debts has been regularly paid, with the exception of that on the unified debt, the payment of which has been as I have already stated.

It is difficult to ascertain how much Egypt has actually received on what now constitutes its indebtedness.

I have made from time to time investigation to ascertain the facts in this regard.

The last loan made—that of the Rothschild's—netted 70 per cent. only, though well covered by a real estate mortgage.

The privileged and the unified bonds were issued in exchange for other bonds and treasury obligations that had been sold at very low rates; the average net proceeds could not have been much over 60 per cent.

One of the old loans of £32,000,000 only netted a little over £19,000,000.

Present market value of Egyptian stock.

Unified debt	62 11/16
Privileged debt	89
Domainal loan	92 3/4
Dairah Saniah	72 1/8
Dairah Khassah	70
Loan of 1864	——
Loan of 1865	——
Loan of 1867	——

For more detailed information relating to the Monkabalah and the debt of Egypt, see my commercial report, above mentioned, of 1879.

I am, sir, your most obedient servant,

E. E. FARNAM.

Hon. WILLIAM M. EVARTS,
Secretary of State, Washington, D. C.

CAPE OF GOOD HOPE.

DEPARTMENT OF STATE,
Washington, June 1, 1880.

SIR: Referring to your letter of the 4th of February last, asking this Department to make inquiries as to the financial affairs of certain countries therein named, and referring also to the reply of this Department thereto, dated the 14th of the same month, I now have the honor to transmit herewith the documents named below, which have been received from the Government of Cape Town Colony, through the consul of the United States at Cape Town.

* * * * * * *

I have the honor to be, sir, your obedient servant,

WM. M. EVARTS.

The Hon. JOHN SHERMAN,
Secretary of the Treasury.

Inclosure: 1. Statement of loans raised on the guarantee of the general revenue under the several loan acts.

CAPE OF GOOD HOPE.

Debentures of stock issued to December 31, 1879.

Date of debenture, &c.	Redeemable. When.	Rate per cent.	Amount.	Value obtained (amount).	Existing debt December 31, 1879.
			£ s. d.	£ s. d.	£ s. d.
Jan. 1, 1861	January 1, 1891	6	150,000 0 0	158,920 6 3	131,300 0 0
June 1, 1861	June 1, 1881	6	25,000 0 0	25,960 0 0	19,000 0 0
Aug. 15, 1863	April 15, 1891	6	150,000 0 0	162,194 4 0	122,000 0 0
Sept. 15, 1863	October 15, 1884	6	24,000 0 0	25,920 10 0	20,800 0 0
Sept. 15, 1864	December 31, 1900	5	255,400 0 0	233,984 16 0	209,200 0 0
Oct. 15, 1864	do	6	20,000 0 0	20,577 0 0	18,100 0 0
Nov. 13, 1865	do	6	20,000 0 0	20,034 15 0	17,600 0 0
Jan. 12, 1867	October 15, 1900	6	200,000 0 0	209,775 19 0	174,400 0 0
Feb. to July, 1870.	Perpetual annuities	4½	54,807 11 0	49,971 13 0	54,807 11 0
Apr. 15, 1873	Drawings (*b*)	4½	150,000 0 0	150,000 0 0	142,200 0 0
Jan. 1, 1876	Perpetual annuities	4½	70,000 0 0	70,500 0 0	70,500 0 0
Jan. 1, 1877	do	4½	500 0 0		
Oct. 15, 1878	Drawings	4½		Nil.	
Jan. 1, 1872	Perpetual annuities	5	49,650 19 9	50,000 0 0	49,650 19 9
Apr. 15, 1873	Drawings	4½	530,000 0 0	530,000 0 0	
Apr. 15, 1873	do	4½	40,000 0 0	38,800 0 0	685,900 0 0
Apr. 15, 1873	do	4½	(*d*)109,000 0 0	110,561 15 0	
Apr. 15, 1873	do	4½	43,900 0 0	43,900 0 0	
	April 1, 1882	6	47,200 0 0	47,200 0 0	31,800 0 0
Oct. 15, 1874	Perpetual annuities	4½	360,000 0 0	360,000 0 0	646,600 0 0
Apr. 15, 1875	Drawings	4½	300,000 0 0	295,442 12 6	
Jan. 1, 1876	do	4½	1,000,000 0 0	987,541 18 6	959,600 0 0
Jan. 15, 1877	do	4½	1,000,000 0 0	1,015,879 1 6	973,100 0 0
Oct. 15, 1877	do	4½	1,000,000 0 0	995,419 4 0	989,500 0 0
Apr. 15, 1878	do	4½	1,000,000 0 0	975,692 17 0	1,000,000 0 0
Oct. 14, 1876	do	4½	300,000 0 0	297,634 1 0	291,500 0 0
July 15, 1876	do	4½	51,300 0 0	51,300 0 0	51,300 0 0
July 1, 1878	December 31, 1899	4½		Nil.	
Jan. 1, 1877	do	4½	7,000 0 0	7,000 0 0	7,000 0 0
Oct. 14, 1876	Perpetual annuities	4½	100,000 0 0	99,211 7 0	99,600 0 0
Oct. 14, 1876	Drawings	4½	150,000 0 0	148,817 0 6	146,400 0 0
Oct. 15, 1878	do	4½	Nil.	Nil.	
Oct. 15, 1878	do	4½	Nil.	Nil.	
Oct. 15, 1878	do	4½	Nil.	Nil.	
Dec. 1, 1878	do	4½	750,000 0 0	737,202 6 9	750,000 0 0
Dec. 1, 1878	do	4½	1,865,600 0 0	1,833,766 4 9	1,865,600 0 0
Apr. 15, 1880	do	4½			
Apr. 15, 1880	do	4½			
Apr. 15, 1880	do	4½			
Apr. 15, 1880	do	4½			
	Total		9,823,358 10 9	9,753,207 11 9	9,527,458 10 9

AUSTRALIA.

No. 61.] UNITED STATES CONSULATE-GENERAL,
Melbourne, June 7, 1880.

SIR: I herewith inclose the report of the consular agent at Port Adelaide, relative to the coinage and public debt of the colony of South Australia, made in compliance with instructions contained in Mr. Evarts' circular dispatch of February 11, 1880, for the information of the honorable Secretary of the Treasury.

I am, sir, very respectfully, your obedient servant,

O. M. SPENCER,
Consul-General.

Hon. JOHN HAY,
Assistant Secretary of State, Washington, D. C.

[Inclosures.]

Statements A, B, and C herewith.
Statements D and E sent under a separate cover.

Total indebtedness of South Australia on 1st May, 1880, £9,882,900, as follows:

Bond bearing interest at 6 per cent. per annum, maturing 1st July, 1880, to 1st July, 1918	£1,446,200. 0. 0
Bond bearing interest at 5 per cent. per annum, maturing 1st July, 1889, to 1st July, 1920	390,000. 0. 0
Bond bearing interest at 4 per cent. per annum, maturing 1st January, 1894, to 1st July, 1929	8,046,700. 0. 0

Bonds issued.	Rate of interest.	When sold.	Amount realized.		
	Per annum.		£	*s.*	*d.*
£150,000	6 per cent...	Various dates from 1854 to 1872	151,104	14	1
250,000	....do	.....do	253,847	9	3
100,000	....do	.....do	107,382	15	0
36,000	....do	.....do	36,000	0	0
200,000	....do	.....do	207,769	19	10
68,100	....do	.....do	73,000	2	6
76,800	....do	.....do	82,019	15	0
36,800	....do	.....do	39,908	10	0
12,600	....do	.....do	13,390	10	0
43,200	....do	.....do	44,144	2	6
32,400	....do	.....do	34,999	10	0
12,800	....do	.....do	14,178	0	0
18,000	....do	.....do	20,211	15	0
34,400	....do	.....do	35,996	5	0
45,300	....do	.....do	47,882	0	0
236,000	....do	.....do	249,953	19	0
18,600	....do	.....do	19,436	15	0
73,400	....do	.....do	77,718	12	6
60,000	....do	.....do	65,966	11	0
500,000	....do	.....do	535,777	12	3
60,000	....do	.....do	63,791	5	0
68,700	....do	.....do	74,913	8	9
112,400	....do	.....do	120,037	7	0
2,245,500					
Less redeemed 799 300					
1,446,200	.....	.....	2,369,430	18	8
114,000	5 per cent...	Various dates from 1871 to 1880	115,634	11	6
26,000	....do	.....do	26,418	5	6
100,000	....do	.....do	99,728	14	4
100,000	....do	.....do	104,694	3	0
25,000	....do	.....do	25,375	0	0
25,000	....do	.....do	25,528	19	2
160,000	4 per cent...	.....do	147,918	1	4
100,000	....do	.....do	89,885	1	8
600,000	....do	.....do	538,088	19	0
400,000	....do	.....do	371,890	15	10
552,000	....do	.....do	519,092	18	5
2,188,500	....do	.....do	2,053,982	18	4
751,600	....do	.....do	666,440	3	2
3,294,600	....do	.....do	3,093,766	0	0
9,882,900	.....	.....	10,147,875	0	11

RECAPITULATION.

Total issued ..	10,682,200	Realized	10,147,875	9	11
Less redeemed	799,300				
	9,882,900	Total realized	10,147,875	9	11

J. W. SMITH,
United States Consular Agent, Port Adelaide.

No. 64.] UNITED STATES CONSULATE-GENERAL,
Melbourne, July 13, 1880.

SIR: In compliance with instructions contained in the circular dispatch of the Secretary of State of February 11, relative to the coinage, currency, and public debt of Victoria, I have the honor to submit the following copies of correspondence and public documents relating thereto.

* * * * * * *

4.—Copy of a letter from the under treasurer of Victoria.
5.—Statements of A, B, and C, relating to the finances and public debt of Victoria.

* * * * * * *

I am, sir, very respectfully, your obedient servant,

O. M. SPENCER,
Consul-General.

Hon. JOHN HAY,
Assistant Secretary of State, Washington, D. C.

THE TREASURY,
Melbourne, April 30, 1880.

SIR: I am directed by the honorable the treasurer to acknowledge the receipt of your letter of the 23d instant, requesting to be supplied, for the information of the United States Government, with particulars of the indebtedness of the Government of Victoria. In compliance with this request I now forward, inclosed, printed copies of three statements marked A, B, and C, respectively, which contain all the information asked for except as regards the items indicated by the letters *d* and *f* in the inclosure to your communication.

The answer to question *d* is, that interest is not in default.

As regards *f*, I am to explain that no record is kept in the treasury of the current market values of government debentures or stock, but quotations of prices (including interest) appear daily in the press.

A memorandum connecting questions *a*, *b*, *c*, and *e* with the printed statements A, B, and C is attached.

I have the honor to be, sir, your most obedient servant,

E. S. SYMONDS,
Under Treasurer.

Stock and share list, Wednesday, July 7.

Amount of loan.	Debentures.	Closing prices.	
		Buyers.	Sellers.
£130,000	Vict. gov. 6 per cents, due 1889	.....	.....
580,620	Vict. gov. 6 per cents, due 1885	£105¼	.....
236,600	Vict. gov. 6 per cents, due 1883	103¼	£104
312,900	Vict. gov. 5 per cents, due 1894	101½	.....
1,003,602	Vict. gov. 4 per cent. stock, due 1894	95	99
100,000	Melbourne corporation, 6 per cent	104	.....
.....	Melbourne corporation, 5 per cent	101	.....
30,000	Melbourne gas, 5 per cent	.....	.....
200,000	Metropolitan gas, 6 per cent	.....	.....
281,400	M. and H. B. U. Railway, 6 per cent	.....	.....
183,900	M. and H. B. U. Railway, 5 per cent	101½	.....
9,729,000	New South Wales, 5 per cent	109	.....
509,780	New South Wales, 4 per cent	.....	.....
500,000	New Zealand, 4 per cent	.....	.....
500,000	Queensland, 4 per cent	.....	.....
25,000	Melbourne meat-preserving, 6 per cent	.....	.....

Monetary and commercial intelligence.

LONDON, *July* 2.

Consols are ¼ higher, and are quoted 99. The market rate of discount is ⅜ per cent. below the bank rate.

LONDON, *July* 3.

Consols have lost the slight rise of yesterday, and are again quoted 98⅞.

Five per cent. New South Wales loan, 1888 to 1902, £109, ex div.; five per cent. New South Wales loan, with two per cent. annual drawings, 1874 to 1898, £104, ex div.; four per cent. New South Wales loan, 1903 to 1905, £90 10*s.*, ex div.; four per cent. Victorian, 1899 to 1901, £99 ex div.; five per cent. Victorian, 1894, £106 10*s.*, ex div.; four and a half per cent. Victorian debentures, 1904, £105 15*s.*, ex div.

Memorandum referred to.

A. See statement A and B under head "Purpose."
b. See statement C under "Redeemable."
C. See statement under "Rate per cent."
e. Amount actually realized. See statements A and B.

Value being £100-par-gross rate at which issued is traceable from columns 1 and 2 in statement 13; the detailed list at which each debenture or debentures was issued is too lengthy to be given; the stock is issued at par.

D.—EAST INDIA (LOANS RAISED IN INDIA).

Return of all loans raised in India, chargeable on the revenues of India, outstanding at the commencement of the half year ending on the 30th September, 1879, with the rates of interest and total amount payable thereon, and the date of the termination of each loan, the debt incurred during the half year, the moneys raised thereby during the half year, the loans paid off or discharged during the half year, and the loans outstanding at the close of the half year, stating, so far as the public convenience will allow, the purpose or service for which moneys have been raised during the half year.

Description of loan.	Rate of interest.	One half-year's interest on the amount of debt outstanding on 1st Apr., '79.	Date of termination of loan.	Amount of loan outstanding on 1st April, 1879.	Amount of debt incurred during the half year ended on 30th Sept'r, 1879.	Moneys raised during the half year ended 30th September, 1879.	Transferred from other loans.	Total.	Amount of debt paid off or discharged during the half year ended 30th Sept'r, '79.	Transferred to other loans.	Amount of debt outstanding on 30th Sept'r, 1879.
Loans bearing interest.		£		£	£	£	£	£	£	£	£
Transfer loan of 1870	4½ per cent.	41, 305	Not before 15th July, 1885	1, 835, 790	.....	.....	.....	1, 835, 790	.....	.....	1, 835, 790
Transfer " " 1871	4½ "	4, 993	Not before 4th July, 1881; falls to 4 per cent. on that date.	221, 900	.....	.....	.....	221, 900	.....	.....	221, 900
Loan of 1878	4½ "	52, 802	Not before 15th September, 1893.	2, 346, 750	.....	.....	.....	2, 346, 750	.....	107, 350	2, 239, 400
Transfer loan of 1879, 4½ per cent., portion.	4½ "	219, 250	.....do	9, 744, 443	4, 975, 680	*4, 728, 441	500, 894	15, 221, 017	100	500	15, 220, 417
Transfer loan of 1879, 78 sterling per cent., portion.	Equivalent in rupees of 78 per R. S. 100.	526	.....do	24, 420	.....	.....	.....	24, 420	.....	.....	24, 420
Loan of 1824–'25	4 per cent.	636	No date specified; but on 3 months' notice by government.	31, 797	.....	.....	.....	31, 797	3	157	31, 637
Loan of 1828–'29	4 "	174	.....do	8, 724	.....	.....	.....	8, 724	2	2, 259	6, 463
Loan of 1832–'33	4 "	23, 614	.....do	1, 180, 690	.....	.....	.....	1, 180, 690	73	98, 711	1, 081, 906
Loan of 1835–'36	4 "	58, 240	.....do	2, 911, 990	.....	.....	.....	2, 911, 990	.....	44, 890	2, 867, 100
Loan of 1842–'43	4 "	352, 701	.....do	17, 635, 076	13, 927	*12, 044	63, 430	17, 712, 433	.....	165, 040	17, 547, 393
Loan of 1854–'55	4 "	125, 138	.....do	6, 256, 910	.....	.....	.....	6, 256, 910	.....	65, 940	6, 190, 970
Transfer loan of 1st May, 1865	4 "	360, 635	.....do	18, 031, 727	6	6	466, 987	18, 498, 720	.....	3, 340	18, 495, 380
Transfer loan of 22nd April, '54	4 "	24, 613	15 months after notice by gov't.	1, 230, 666	.....	.....	.....	1, 230, 666	.....	.....	1, 230, 666
Loan of 1853–'54	3½ "	1, 141	3 months after notice by gov't.	65, 200	.....	.....	.....	65, 200	.....	.....	65, 200
Railway loan from Maharajah Holkar.	4½ "	22, 500	No date specified	1, 000, 000	.....	.....	.....	1, 000, 000	.....	.....	1, 000, 000
Debenture loan of 1867–'68	5 "	15, 008	1st June, 1882	600, 300	.....	.....	.....	600, 300	.....	.....	600, 300

Promissory notes for Mysore family	4	"	3, 164	No date specified	158, 226	.....	.....	.....	158, 226	57	32, 120	126, 049
Railway loan from Maharajah Scindia.	4	"	30, 000	do	1, 500, 000	.....	.....	.....	1, 500, 000	.....	.....	1, 500, 000
Reduced loan of 16th January, '79	4	"	247, 843	16th January, 1882	12, 392, 130	.....	.....	.....	12, 392, 130	.....	117, 960	12, 274, 170
			1, 584, 283	Total debt in India bearing interest.	77, 176, 739	4, 989, 613	4, 740, 491	1, 031, 311	83, 197, 663	235	638, 267	82, 559, 161
Loans not bearing interest.												
5 per cent. loan of 1825–'26					6, 240	.....	.....	.....	6, 240	.....	.....	6, 240
5 per cent. loan of 1841–'42					1, 590	.....	.....	.....	1, 590	.....	.....	1, 590
5 per cent. loan of 1854–'55, for public works.					5, 950	.....	.....	.....	5, 950	50	.....	5, 900
5 per cent. loan of 1856–'57					14, 710	.....	.....	.....	14, 710	350	.....	14, 360
5½ per cent. loan of 1859–'60 (repayable 1st May, 1879).				Order to be paid off	1, 621, 117	1, 100	.....	500	1, 622, 717	1, 068, 603	393, 544	160, 570
5 per cent. debenture loan of 1867–'68					3, 300	.....	.....	.....	3, 300	300	.....	3, 000
Treasury bills at 2½ pie per rupees 100 per diem.					9, 280	.....	.....	.....	9, 280	.....	.....	9, 280
				Total debt in India not bearing interest.	1, 662, 187	1, 100	.....	500	1, 663, 787	1, 069, 303	393, 544	200, 940
				Total debt in India	78, 838, 926	4, 990, 713	4, 740, 491	1, 031, 811	84, 861, 450	1, 069, 538	1, 031, 811	82, 760, 101

*To meet expenditure on productive public works and to strengthen the cash balance.

SIR EDWARD STANHOPE,
Under Sec'y of State.

COMPTROLLER-GEN'L'S OFFICE, *Calcutta, 5th Dec.*, 1879.

W. WATERFIELD,
Off. Comptroller-General.

True copy.

W. D. CINK,
Registrar Dep't of Finance & Commerce.

E.—EAST INDIA (LOANS RAISED IN ENGLAND).

Return of all loans raised in England under the provisions of any acts of Parliament, chargeable on the revenues of India, outstanding at the commencement of the half year ending on the 30th September, 1879, with the rates of interest and total amount payable thereon, and the date of the termination of each loan; the debt incurred during the half year; the moneys raised thereby during the half year; the loans paid off or discharged during the half year, and the loans outstanding at the close of the half year, stating, so far as the public convenience will allow, the purpose or service for which moneys have been raised during the half year.

Description of loan.	Rate of interest.	Total amount of interest payable thereon during the half year ended 30th Sept., 1879.	Date of termination of loan.	Amount of debt outstanding on 1st April, 1879.	Amount of debt incurred during the half year ended 30th Sept., 1879.	Moneys received during the half year ended Sept. 30, 1879.	Amount of debt paid off or discharged during the half year ended 30th Sept., 1879.	Amount of debt outstanding on 30th Sept., 1879.
Loans bearing interest.		£		£	£	£	£	£
East India bonds	4 per cent	109, 934	At any time after 12 calendar months' notice.	5, 496, 700	.....	.....	.....	5, 496, 700
Do	3 "	4, 849	4th April, 1879	1, 000, 000	.....	.....	1, 000, 000	.....
Do	2½ "	2, 089	4th June, 1879	.....	500, 000	*500, 000	500, 000	.....
India debentures	4 "	151, 304	16th August, 1884	7, 596, 500	.....	.....	300, 000	7, 296, 500
India 5 per cent. stock	5 "	430, 000	Not redeemable until 5th July, 1880, but after that day, upon one year's notice by the secretary of state for India in council.	17, 200, 000	.....	.....	.....	17, 200, 000
India 4 per cent. stock	4 "	572, 562	Not redeemable until 10th Oct., 1888, but after that day, upon one year's notice by the secretary of state for India in council.	28, 715, 000	1, 570, 000	*1, 590, 044	.....	30, 285, 000
		1, 270, 738	Total debt in England bearing interest.	60, 008, 200	2, 070, 000	2, 090, 044	1, 800, 000	60, 278, 200
Advance from Her Majesty's treasury under "Indian advance, Oct., 1879."	3 per cent	The interest to be repaid to the gov't of India.	Part of 2, 000, 000 l. to be repaid as follows:					
			In the financial year 1880–'1 £290, 000					
			In each of the six succeeding financial years 285, 000	.....	1, 500, 000	†1, 500, 000	.....	1, 500, 000

Loans not bearing interest.									
East India bonds	.....	.....	On presentation of the bonds	20, 917	.....	.....	.....	20, 917
			Total debt in England	60, 029, 117	3, 570, 000	.....	1, 800, 000	61, 799, 117

* For the repayment of East India bonds and India debentures.
† Including 862 l. interest at 2½ per cent. per annum, for a temporary loan on the security of India 4 per cent. stock.
‡ Towards meeting the expenses of military operations in Afghanistan.

EDWARD STANHOPE,
Under Secretary of State.
T. W. KEITH,
Accountant-General.
W. D. CINK,
Registrar Depart. of Finance & Commerce.

INDIA OFFICE, 1*st October*, 1879.

True copy.

CHINA.

No. 732.] LEGATION OF THE UNITED STATES,
Peking, July 17, 1880.

SIR: I had the honor to receive your special and separate circular instruction of February 11, requesting me to answer, for China, certain interrogatories propounded by the Secretary of the Treasury in regard to the financial condition of certain countries. * * *

6. A statement of the indebtedness of the country, &c., &c.

The Chinese have no national debt; they have of late years, from time to time, made a few loans through foreign banks and mercantile houses, but they have issued no bonds. The whole amount of such indebtedness does not exceed eight or ten millions of dollars. They have paid a high rate of interest, about 9 per centum, I believe, not so much because their credit is not good as because they have not exercised care and skill in their negotiations. Their loans have been promptly repaid on maturity, and there has been no default in the payment of interest.

I may also add that I have no information upon the questions propounded in your later circular instruction of April 30, aside from that already furnished in my dispatch mentioned above.

It would be useless to make application in any Chinese official quarter for further or fuller responses to the questions asked by the Secretary of the Treasury.

I have the honor to be, sir, your obedient servant,

GEORGE F. SEWARD.

Hon. WILLIAM M. EVARTS,
Secretary of State.

SALVADOR.

CHIEF AUDITOR'S OFFICE, REPUBLIC OF SALVADOR,
San Salvador, April 8, 1880.

Hon. MINISTER OF FOREIGN RELATIONS:

In answer to your esteemed note dated the 2nd instant, in which you are pleased to ask of this office data corresponding to the note from the Secretary of State of the United States, I have the honor to say to you * * *

On the national debt spoken of in the sixth point of the note, we must go back to the year 1830, a little more or less, when was made the first law of public credit, ordaining to be recognized the damages, injuries, exactions, &c., originating in the different political convulsions occurring since the year 1822. The quantity recognized cannot be calculated, and no interest was indicated, nor any time for its amortization. This paper bears the denomination of "Vales del Estado" (indebtedness of the state).

From the creation of the above law until 1876, the original decree of which I inclose, there have been various decrees creating commissions of the public credit, and recognizing the damages and losses caused in the time elapsed from one to the other commission, until the last of 1876, in which, without indicating the quantity which should be recognized, the interest is fixed at 12 per cent., which should be recognized both in the paper and in the act of its amortization, in the different branches indicated by legislation. This class of paper bears the denomination of bills ("billetes") of public credit, and up to the last of September, 1879, amounted to the sum of $1,945,201. The value of this paper in the market is 80 per cent. discount.

There is, in addition to this debt, another, whose denomination is that of "payable to the bearer," bearing the same interest of 12 per cent. per annum, or its value calculated to the time of its amortization, in the different branches indicated by the law.

The quantity of this paper in circulation up to the last of September, 1879, was $392,777.

Its rate in the market is that of 40 per cent. discount, and this paper, as well as the other, has no time indicated for its amortization.

This is all the subscriber has to say on the subject.

I am, Mr. Minister, your obedient servant,

M. DELGADO.

A true copy.

M. AMELLIAMES.

NICARAGUA.

No. 469.] MANAGUA, *April* 30, 1880.

Hon. MINISTER OF FOREIGN RELATIONS:

SIR: I had the honor to receive your excellency's esteemed dispatch of the 22d instant, with a translation of another directed by the Secretary of State of the United States to the minister resident of that republic in Nicaragua, who, in turn, transmitted it to your excellency in order to obtain the information solicited therein, concerning the coinage of the money of this republic, circulation of foreign coins, and on various points relative to the credit of the country.

* * * * * * *

The republic, on separating itself from the federation of Central America, and declaring itself independent, had to assume the sixth part of a debt contracted by the Federal Government, with its corresponding interest. This debt, the only exterior one which rested upon her, was arranged in London for £31,510, which was punctually paid, with the agreed interest. However, the small quantity of £4,454 5s. is excepted, which yet remains due, as the corresponding titles have not yet been presented, perhaps, because they have disappeared by some accident; but they will be canceled as soon as presented. The whole of the interior debt of the republic is represented by a single paper, which bears the name of *consolidated bond* ("bono consolidado)," and which bears interest at the rate of 5 per cent. per annum from the 1st of December, 1877, and is amortized in the custom-houses to the extent of 25 per cent. of the maritime duties, and in payment of unappropriated lands. This paper is quoted in the actual market at 60 per cent. I inclose the decree of its creation, and another which ordained the consolidation into the said bond of the whole of the interior debt, which until 1877 circulated in different kinds of papers. I inclose also two statements, marked No. 1 and No. 2, which give an understanding of the situation of the interior debt represented by said bond. No. 1 shows that from the month of December, 1877, in which these documents began to be emitted and amortized, until the 18th of the present month the total emission amounts to $1,397,438.90; that the amortization of the capital amounts to $417,492.80, and of the interest to $25,612, and that the circulation amounts to $979,496.10 of capital, and $116,723.25 of interest. However, to these figures must be added $149,874.61, which still lack emission in the aforesaid bonds to complete the consolidation of the whole of the interior debt, as is shown by statement No. 2.

From this explanation, and taking in consideration the total amount of that debt, and the quantity amortized in the time mentioned, it is seen that it will be extinguished in a period of not more than eight years.

With all attention, I am your excellency's obedient servant,

JOAQUIN ELIZORDO.

A true copy.
Chief of the section,

F. J. MEDINA.

o

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. Doc. No. 64.

EXPENDITURES OF COAST AND GEODETIC SURVEY.

LETTER

FROM

THE SECRETARY OF THE TREASURY,

TRANSMITTING

Report of the expenditures of the Coast and Geodetic Survey for the year ending June 30, 1880.

JANUARY 31, 1881.—Referred to the Committee on Expenditures in the Treasury Department and ordered to be printed.

TREASURY DEPARTMENT, *January* 26, 1881.

SIR: I have the honor to transmit herewith for your information, in pursuance of the provisions of act of Congress approved March 3, 1853 (10 Stat. at L., p. 209), a copy of a letter, of the 21st instant, from J. W. Porter, disbursing agent United States Coast and Geodetic Survey, inclosing a statement of the expenditures on account of the Survey for the fiscal year ending June 30, 1880.

Very respectfully,

JOHN SHERMAN,
Secretary.

The Hon. SAMUEL J. RANDALL,
Speaker of the House of Representatives.

U. S. COAST AND GEODETIC SURVEY OFFICE,
Washington, January 21, 1881.

SIR: Pursuant to act approved March 3, 1853, I have the honor to transmit herewith a statement showing expenditures on account of Coast and Geodetic Survey for the fiscal year ending June 30, 1880.

Very respectfully,

J. W. PORTER,
Disbursing Agent.

The SECRETARY OF THE TREASURY.

List showing the number and names of persons employed in the Coast and Geodetic Survey during the fiscal year ending June 30, 1880, *the amount of compensation and time of employment, with a statement of all expenditures made under the direction of the Superintendent of the Coast and Geodetic Survey.*

[Prepared pursuant to act approved March 3, 1853.]

Names and offices.	Amount of compensation.	Time employed.
SUPERINTENDENT.		
C. P. Patterson	$6,000 00	1 year.
ASSISTANT.		
W. W. Cooper	3,482 00	1 year.
ASSISTANTS.		
J. E. Hilgard	4,200 00	1 year.
George Davidson	3,730 00	1 year.
F. H. Gerdes	3,150 00	1 year.
R. D. Cutts	3,620 00	1 year.
C. O. Boutelle	3,620 00	1 year.
H. L. Whiting	3,160 00	1 year.
Henry Mitchell	3,200 00	1 year.
George W. Dean	2,870 00	1 year.
C. S. Peirce	2,391 67	10 months.
W. E. Greenwell	2,750 00	1 year.
A. F. Rodgers	2,640 00	1 year.
A. M. Harrison	1,200 00	1 year.
George A. Fairfield	2,180 00	1 year.
J. A. Sullivan	2,180 00	1 year.
James S. Lawson	2,120 00	1 year.
C. Rockwell	2,120 00	1 year.
A. W. Longfellow	2,070 00	1 year.
W. H. Dennis	2,070 00	1 year.
Edward Goodfellow	2,010 00	1 year.
C. M. Bache	2,010 00	1 year.
R. M. Bache	2,010 00	1 year.
John W. Donn	2,010 00	1 year.
A. T. Mosman	2,010 00	1 year.
C. H. Boyd	1,950 00	1 year.
Charles Hosmer	1,950 00	1 year.
C. T. Iardella	1,900 00	1 year.
J. S. Bradford	1,900 00	1 year.
S. C. McCorkle	1,840 00	1 year.
R. E. Halter	1,800 00	1 year.
Fred. F. Nes	9 75	2 days.
L. A. Sengteller	1,750 00	1 year.
H. G. Ogden	1,750 00	1 year.
Gershom Bradford	1,749 25	1 year.
H. L. Marindin	1,600 00	1 year.
William Eimbeck	1,600 00	1 year.
J. J. Gilbert	1,600 00	1 year.
F. Walley Perkins	1,600 00	1 year.
Stehman Forney	1,600 00	1 year.
O. H. Tittman	1,599 46	1 year.
F. D. Granger	1,500 00	1 year.
B. A. Colonna	1,500 00	1 year.
Edwin Smith	1,499 74	1 year.
E. Hergesheimer	2,100 00	1 year.
ACTING ASSISTANT.		
William H. Dall	1,500 00	1 year.
SUBASSISTANTS.		
Eugene Ellicott	1,300 00	1 year.
Andrew Braid	1,399 18	1 year.
H. W. Blair	1,249 18	1 year.
James Hergesheimer	801 03	8 months and 15 days.
D. B. Wainwright	1,100 00	1 year.
J. F. Pratt	1,100 00	1 year.
James B. Baylor	1,094 07	1 year.
E. F. Dickins	1,200 00	1 year.
W. Irving Vinal	1,100 00	1 year.
CONSULTING GEOMETER.		
Benjamin Peirce	4,000 00	1 year.
LIBRARIAN.		
Samuel Hein	1,800 00	1 year.
CLERK TO SUPERINTENDENT.		
W. B. Chilton	907 46	1 year.

Number and names of persons employed in the Coast and Geodetic Survey, &c.—Continued.

Names and offices.	Amount of compensation.	Time employed.
DISBURSING AGENT.		
J. W. Porter	$2,500 00	1 year.
BOOK-KEEPER AND ACCOUNTANT.		
R. L. Hawkins	2,000 00	1 year.
COMPUTERS.		
Charles Schott, assistant	2,760 00	1 year.
G. Rumpf	1,740 00	1 year.
M. H. Doolittle	1,805 50	1 year.
Marcus Baker	1,000 00	8 months.
James Main	1,200 00	1 year.
F. A. Sawyer	500 00	5 months.
Jermain G. Porter	1,290 00	1 year.
A. S. Christie	962 50	1 year.
T. E. Norelius	420 00	7 months.
E. D. Preston	675 00	9 months.
OFFICE OF ASSISTANT IN CHARGE.		
W. A. Herbert, clerk	1,200 00	1 year.
William B. French, clerk	1,153 33	11 months and 16 days.
TIDE COMPUTERS.		
R. S. Avery	2,000 00	1 year.
L. P. Shidy	900 00	1 year.
M. Thomas	720 00	1 year.
M. E. Nesbitt	540 00	9 months.
Thomas Craig	1,200 00	1 year.
DRAUGHTSMEN.		
W. T. Bright	2,050 00	1 year.
A. Lindenkohl	2,350 00	1 year.
Louis Karcher	1,805 50	1 year.
P. Erichsen	1,256 00	1 year.
E. Molkow	1,256 00	1 year.
E. J. Sommer	1,150 00	1 year.
Edwin H. Fowler	225 00	3 months.
R. E. Peary	225 00	3 months.
A. B. Graham	225 00	3 months.
A. E. Burton	80 00	32 days.
WRITERS.		
George A. Morrison	840 00	1 year.
John C. Barr	46 70	17 days.
HYDROGRAPHIC DRAUGHTSMEN.		
E. Willenbucher	2,000 00	1 year.
Charles Junken	1,800 00	1 year.
W. C. Willenbucher	1,021 60	1 year.
Frank C. Donn	1,204 21	1 year.
SUBOFFICE, SAN FRANCISCO.		
Draughtsmen.		
Ferdinand Westdahl	1,800 00	1 year.
G. Farquhar	983 33	9 months and 25 days.
JANITOR.		
Vincente Denis	871 90	1 year.
CLERK.		
Samuel T. Shreve	50 00	1 month.
ENGRAVERS.		
E. A. Maedel	2,000 00	1 year.
A. Sengteller	1,800 00	1 year.
H. M. Knight	1,727 00	1 year.
A. Peterson	1,727 00	1 year.
W. A. Thompson	1,727 00	1 year.
John G. Thompson	1,570 00	1 year.
John J. Young	450 00	3 months and 11 days.
Edward H. Sipe	1,413 00	1 year.
W. H. Davis	1,255 50	1 year.
Theodore Wasserbach	468 00	6 months.
WRITERS.		
L. C. Kerr	1,020 50	1 year.
John H. Smoot	628 00	1 year.

Number and names of persons employed in the Coast and Geodetic Survey, &c.—Continued.

Names and offices.	Amount of compensation.	Time employed.
ELECTROTYPIST.		
A. Zumbrock	$2,000 00	1 year.
Frank Over, assistant	1,000 00	1 year.
IN CHARGE OF MISCELLANEOUS DIVISION.		
M. W. Wines	1,516 66	1 year.
JANITOR.		
N. Y. Cavitt	1,200 00	1 year.
CHIEF MECHANICIAN.		
G. N. Saegmueller	1,581 66	1 year.
INSTRUMENT MAKERS.		
John Clark	1,570 00	1 year.
William Jacobi	942 00	1 year.
E. Eschleman	708 00	9 months.
Werner Suess	1,256 00	1 year.
MAP ROOM.		
Thomas McDonnell	1,600 00	1 year.
ARCHIVES.		
G. A. Stewart	1,500 00	1 year.
WRITER.		
C. Abert	900 00	1 year.
COPPER-PLATE PRINTERS.		
Frank Moore	1,570 00	1 year.
D. N. Hoover	942 00	1 year.
James Beck	785 00	1 year.
LABORER TO PLATE PRINTER.		
Horace Dyer	582 25	1 year.
COPPER-PLATE PRINTERS.		
James L. Smith	52 50	21 days.
James S. Reilly	37 50	15 days.
CARPENTERS.		
A. Yeatman	1,570 00	1 year.
George W. Clarvoe	235 50	1 year.
BOOK-BINDER.		
H. Nissen	1,177 50	1 year.
R. T. Bassett, assistant	780 00	1 year.
MESSENGERS.		
William H. Butler	878 40	1 year.
Edward L. Savoy	841 80	1 year.
William Young	823 50	1 year.
Charles Over	823 50	1 year.
Henry McKenzie	732 00	1 year.
W. B. Ingram	366 00	1 year.
C. H. Jones	670 00	11 months.
WATCHMEN.		
A. C. Whitney	896 70	1 year.
William M. Long	896 70	1 year.
H. W. Huber	896 70	1 year.
R. W. Simmons	30 00	15 days.
LABORERS.		
W. D. Butler	549 00	1 year.
S. E. Flynn	314 00	1 year.
FIREMAN.		
Richard Waters	732 00	1 year.
DRIVER.		
Hazzard McCoy	720 00	1 year.
PUBLISHING RESULTS.		
William Ferrel, in charge	1,400 00	1 year.
E. H. Courtenay	1,620 00	1 year.
L. J. Ferrel	540 00	1 year.
C. B. Turnbull	720 00	1 year.
E. D. Preston	225 00	3 months.

Number and names of persons employed in the Coast and Geodetic Survey, &c.—Continued.

Names and offices.	Amount of compensation.	Time employed.
PUBLISHING RESULTS—Continued.		
Richard M. Harvey	$150 00	3 months.
T. J. O'Sullivan	300 00	3 months.
AIDS.		
F. H. Parsons	431 50	5 months.
C. H. Van Orden	273 00	3 months.
John B. Weir	150 00	1 month.
William C. Hodgkins	120 00	1 month.
ACTING AIDS.		
Carlisle Terry, jr	67 68	1 month and 13 days.
Isaac Winston	27 68	13 days.
John E. McGrath	721 00	11 months.
P. A. Welker	312 32	5 months and 21 days.
George F. Bird	308 93	5 months and 21 days.
Thomas P. Borden	51 00	1 month.
DRAWING.		
H. Lindenkohl	2, 225 00	1 year.
N. Hammerschlag	558 54	Contract.
Hugo Eichholtz	1, 099 00	1 year.
Edwin H. Fowler	419 68	8 months and 23 days.
W. K. Randolph	254 19	6 months and 12 days.
A. B. Graham	418 39	8 months and 22 days.
W. C. Ames	334 19	8 months and 12 days.
A. E. Burton	399 04	8 months and 9 days.
Robert E. Peary	399 04	8 months and 9 days.
T. J. O'Sullivan	200 00	2 months.
ENGRAVING.		
F. W. Benner	628 81	Contract.
James Enthoffer	2, 066 00	Contract.
H. C. Evans	2, 035 62	Contract.
R. F. Bartle	1, 552 61	Contract.
F. Courtenay	695 87	Contract.
Theo. Wassenbach	474 00	Contract.
A. C. Reubsarn	360 00	Contract.
George McCoy	1, 122 00	Contract.
James C. Lee	250 00	Contract.
Jacob Hyatt	75 00	Contract.
James Loughren	287 33	Contract.
William Smith	161 10	Contract.
E. Maurice Cropley	150 00	Contract.
Charles L. Drinkard, writer	20 00	10 days.
INSTRUMENT MAKER.		
Peter Vierbuchen	731 50	7 months and 24 days.
COPYING, ETC.		
S. B. Walker	720 00	1 year.
Richard M. Harvey	450 00	9 months.
J. Martin	540 00	1 year.
S. C. Ayres	540 00	1 year.
P. P. Mullett	251 77	7 months and 6 days.
P. M. Pride	175 00	5 months.
C. L. Barton	690 00	1 year.
RECORDERS.		
J. W. Butler	425 00	7 months.
E. L. Taney	222 00	4 months.
W. C. Ames	120 00	3 months.
CARPENTERS.		
C. Webster	25 50	17 days.
George Dorn	211 50	5 months and 10 days.
LABORERS.		
J. D. Baltimore	70 00	1 month and 13 days.
John W. Reed	366 00	9 months and 8 days.

Expenditures for the survey of the Eastern Division of the United States for the fiscal year ending June 30, 1880.

	1879.		1880.		
	Quarter ending September 30.	Quarter ending December 31.	Quarter ending March 31.	Quarter ending June 30.	Total for year.
Triangulation and astronomical	$31,850 60	$13,652 79	$3,719 90	$9,381 80	$58,605 09
Topography	5,400 44	5,250 66	1,303 53	2,625 05	14,579 68
Hydrography	11,219 33	12,397 88	6,425 96	7,200 12	37,243 29
Coast Pilot	1,126 74	1,125 75	1,031 82	1,013 90	4,298 21
Pendulum operations	2,431 53	1,986 14	1,472 33	847 27	6,737 27
Leveling	1,202 42	1,238 29	.....	1,646 69	4,087 40
Magnetics	721 37	492 35	913 24	360 45	2,487 41
Tidal operations	826 19	441 13	592 37	337 95	2,197 64
Ship-keeping, &c	411 62	282 68	155 86	235 21	1,085 37
Office expenses	9,022 39	7,112 37	259 50	5,384 71	21,778 97
Pay in office	17,772 53	19,060 21	17,394 62	18,277 17	72,504 53
Pay of officers in field	21,083 99	20,980 07	18,610 50	21,037 67	81,712 23
Total expenditures	103,069 15	84,020 32	51,879 63	68,347 99	307,317 09

Appropriation	$307,500 00
Expenditures	307,317 09
Balance	182 91

Expenditures for the survey of the Western Division of the United States for the fiscal year ending June 30, 1880.

	1879.		1880.		
	Quarter ending September 30.	Quarter ending December 31.	Quarter ending March 31.	Quarter ending June 30.	Total for year.
Triangulation and astronomical	$25,640 42	$17,691 02	$4,260 30	$10,286 97	$57,878 71
Topography	7,507 05	4,187 73	438 29	949 56	13,082 63
Hydrography	7,400 01	5,479 53	1,458 11	5,097 19	19,434 84
Tidal operations	290 68	858 26	294 40	444 32	1,887 66
Office expenses	.....	.....	8,115 40	1,017 11	9,132 51
Pay in office	14,756 75	13,257 03	13,378 25	9,954 02	51,346 05
Pay of officers in field	7,888 71	7,890 00	10,390 00	7,877 50	34,046 21
Total expenditures	63,483 62	49,363 57	38,334 75	35,626 67	186,808 61

Appropriation	$187,500 00
Expenditures	186,808 61
*Balance	691 39

*It is estimated that this balance will be absorbed in payment by settlement of certificates for travel on land-grant railroads, and is especially reserved for that purpose.

For repairs and maintenance of the complement of vessels used in the Coast and Geodetic Survey in fiscal year 1880.

Repairs of steamer Blake	$12,672 44
steamer Hassler	5,456 87
steamer Hitchcock	4,189 24
steamer Gedney	2,357 04
steamer McArthur	2,274 71

Repairs of steamer Bache		1,484 03
steamer Endeavor		1,275 93
steamer Baton Rouge		179 49
steamer Fathomer		58 52
steamer Arago		10 77
steam launch No. 4		20 00
steam launch Sagadahoc		230 00
schooner Eagre		3,302 73
schooner Yukon		1,759 88
schooner Brisk		1,495 75
schooner Quick		1,497 04
schooner Silliman		506,67
schooner Palinurus		291 41
schooner Scoresby		782 96
schooner Ready		97 10
schooner Drift		57 42
Total expenditures		40,000 00
Appropriation	$40,000 00	
Expenditures	40,000 00	

For general expenses of the Coast and Geodetic Survey in the fiscal year 1880.

For rent of buildings, No. 211, South New Jersey avenue, and No. 215, South Capitol street		$13,600 00
For rent of fire-proof building, No. 205, South New Jersey avenue		5,000 00
For rent of office, San Francisco, Cal		1,500 00
For fuel for all offices and buildings		1,148 34
For the transportation of instruments, maps, and charts, the purchase of new instruments, books, maps, and charts, and for gas and other miscellaneous expenses		10,751 66
Total expenditures		32,000,00
Appropriation	$32,000 00	
Expenditures	32,000 00	

For publishing the observations and results made in the progress of the survey of the coast in the fiscal year 1880.

Pay of those employed	$4,955 00
Photolithographing, &c	1,045 00
Total expenditures	6,000 00
Appropriation	6,000 00

For construction and verification of standard weights and measures in fiscal year 1880.

Pay of those employed	$4,733 40
Rent	1,400 00
Contingencies	866 60
Total expenditures	7,000 00
Appropriation	7,000 00

I certify the foregoing to be a true exhibit of the expenditures of the United States Coast and Geodetic Survey for the fiscal year ending June 30, 1880.

J. W. PORTER,
Disbursing Agent.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { EX. DOC. No. 65.

APPORTIONMENT UNDER TENTH CENSUS OF THE UNITED STATES.

LETTER

FROM

THE SECRETARY OF THE INTERIOR,

TRANSMITTING

TABULAR STATEMENTS

EXHIBITING

THE TOTAL POPULATION OF EACH STATE AND TERRITORY;

THE APPORTIONMENT OF MEMBERS OF CONGRESS FROM 293 TO 325;

MOIETY QUESTION, &c.;

TOGETHER WITH

REMARKS OF HON. S. S. COX, CHAIRMAN, &c.

JANUARY 31, 1881.—Ordered to be reprinted.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1881.

APPORTIONMENT UNDER TENTH CENSUS.

POPULATION OF THE UNITED STATES.

Letter from the Superintendent of the Census.

DEPARTMENT OF THE INTERIOR,
Washington, January 7, 1881.

SIR: I have the honor to transmit herewith a copy of a report of the Superintendent of the Census, giving complete returns of the population of each State and Territory on the 1st day of June, 1880.

Very respectfully,

C. SCHURZ,
Secretary.

The SPEAKER
of the House of Representatives.

DEPARTMENT OF THE INTERIOR, CENSUS OFFICE,
Washington, D. C., January 17, 1881.

SIR: I have the honor to report that on Saturday, the 15th instant, the last returns of population were received at this office, completing the tenth census of the United States.

Carefully-revised computations give the following as the population of each State and Territory on the 1st of June, 1880:

STATE TOTALS.

Alabama	1,262,794
Arkansas	802,564
California	864,686
Colorado	194,649
Connecticut	622,683
Delaware	146,654
Florida	267,351
Georgia	1,539,048
Illinois	3,078,769
Indiana	1,978,362
Iowa	1,624,620
Kansas	995,966
Kentucky	1,648,708
Louisiana	940,103
Maine	648,945
Maryland	934,632
Massachusetts	1,783,012
Michigan	1,636,331
Minnesota	780,806
Mississippi	1,131,592
Missouri	2,168,804
Nebraska	452,433
Nevada	62,265
New Hampshire	346,984
New Jersey	1,130,983

New York	5,083,810
North Carolina	1,400,047
Ohio	3,198,239
Oregon	174,767
Pennsylvania	4,282,786
Rhode Island	276,528
South Carolina	995,622
Tennessee	1,542,463
Texas	1,592,574
Vermont	332,286
Virginia	1,512,806
West Virginia	618,443
Wisconsin	1,315,480
Total of States	49,369,595
The District of Columbia	177,638

THE TERRITORIES.

Arizona	40,441	
Dakota	135,180	
Idaho	32,611	
Montana	39,157	
New Mexico	118,430	
Utah	143,906	
Washington	75,120	
Wyoming	20,788	
Total of Territories		605,633
Grand total of the United States		50,152,866

Very respectfully, your obedient servant,

FRANCIS A. WALKER,
Superintendent of Census.

Hon. C. SCHURZ,
Secretary of the Interior.

The SPEAKER. The communication will be referred to the Joint Select Committee on the Census.

Mr. COX. Would it be in order for me to make a motion as to the printing?

The SPEAKER. By consent, it would.

Mr. COX. I ask consent to make a motion as to the printing of the document just read and the printing of certain other tabular statements which have been furnished as to the apportionment of Representatives under the Tenth Census.

The SPEAKER. Is there objection? The Chair hears none. How does the gentleman desire to have them printed? In the Record?

Mr. COX. Yes, sir. I desire to make a brief statement.

Mr. STONE. For how long?

Mr. COX. Only a very few minutes.

Mr. ROBINSON. The tables spoken of, I suppose, are from the department?

The SPEAKER. The tables that have been read are from the department.

REMARKS OF HON. S. S. COX.

Mr. COX. I move to print the communication from the Secretary of the Interior in the Record, together with two tables sent to the Committee on the Census this morning from General Walker, its Superintendent. These tables were finished on yesterday after much careful

labor with the aid of a dozen clerks and their accomplished chief. I received them early this morning, and am directed by my committee to ask their printing in the Record and in pamphlet form. This ought to be done, as they bear upon the most important and interesting duty of Congress—apportionment. So much inquiry has been made by members on this topic that, before a report on the subject by the committee or action by the House, it would be well, in fact indispensable, to publish these official facts and calculations.

The official return of the whole population of the United States is 50,152,366. Deducting Territories and District of Columbia (783,271) leaves the Representative population of the United States at 49,369,595. Table "A" shows this Representative population for the several States. It also shows the number of Representatives to be assigned to each State on an even division; that is, not counting any fraction, or residuum, or remainder. Besides it shows, with the ratios and the fractions resulting, the final number of members for each State, running from the present number of members, two hundred and ninety-three, to three hundred and seven, both inclusive. This calculation is made on this plan: The final number of members from two hundred and ninety-three to three hundred and seven is used as a divisor in obtaining the ratio of representation to the whole Representative population. This ratio is applied successively to the population of each State. This process will yield in the aggregate a number less than the number of Representatives originally taken. The difference (according to the best and most equitable recent practice) should be made up by assigning to the States having the largest fractions additional Representatives. Whenever a sufficient number of additional Representatives has been assigned—on account of fractions to make up the total number taken—such assignment should cease. There is no place for moieties or arbitrary numbers, as will appear when the matter comes up for discussion.

The first table, "A," is based on this method.

The second table, "B," is more compendious. It shows in its first column the present number under the apportionment of 1870 as distributed among the several States; and in the second column the final number for each State on the census of 1880, on the basis of 293; and in the other columns that number with all the changes from 293 up to and including 307.

From these columns gentlemen may see the loss or gain over the number of the present House under the apportionment of 1870 and the census of 1880, running from 293 to 307.

It appears that on the census of 1880, by the increase from to 293 to 294, Massachusetts gains 1; by the increase to 295, Louisiana gains 1; by the increase to 296, Pennsylvania gains 1; by the increase to 297, Maryland gains 1; by the increase to 298, New York gains 1; by the increase to 299, Alabama gains 1; and when the total number of Representatives is increased to 300, one of the most striking features of the table appears. It is a curious eccentricity of mathematics—a paradox, the explication of which upon pure arithmetical logic may be found in one of the communications which accompanies the tables. The paradox is that Alabama loses at 300 the Representative she gained at 299, and Texas and Illinois gain 1 each. At 301, Alabama regains the Representative so lost; by the increase to 302, Florida gains 1; by the increase to 303, Ohio gains 1; by the increase to 304, North Carolina gains 1; by the increase to 305, Tennessee gains 1; by the increase to 306, Pennsylvania gains 1; by the increase to 307, New York gains another, making two gains over 293, under the census of 1880, but still

New York even then loses 1 from her present number assigned her under the apportionment of 1870.

Compared with the present number, under the census of 1870, each member can make his own calculation as to gains and losses. There are losses. There always will be during a lapse of ten years. The largest House we ever had before 1863 was under the census of 1830. Massachusetts then had 20 members; now she has 11. New York then had 40 members; now she will not hold her present number, 33, unless the number of members is 307. Virginia at one time had 23; now she has 9. New Hampshire once had 6; now she has 3. The losses are comparative, and every apportionment has witnessed such reductions. Vermont and New Hampshire may gain in population, but not relatively. They must lose in this apportionment, unless we make the number of members inordinately large. But all this is to be judged on a scrutiny of the tables. How high we must run the number of members so that no State will lose, members can compute for themselves, from the data to be printed.

The SPEAKER. The Chair understands the gentleman from New York asks leave to introduce a bill in reference to the apportionment.

Mr. COX. Yes, sir. This is not a bill from the committee; I desire to introduce it that it may be sent to the committee.

The SPEAKER. The Chair understands the bill to be introduced by the gentleman from New York in his individual capacity as a member. Does he desire to have it read?

Mr. COX. No, sir.

Mr. STEVENSON. I ask that it be printed in the Record.

Mr. COX, by unanimous consent, introduced a bill (H. R. No. 6958) making an apportionment of Representatives in Congress among the several States under the Tenth Census; which was read a first and second time, referred to the Joint Select Committee on the Census, and ordered to be printed.

Mr. COX. I ask that it may also be printed in the Record.

There was no objection.

The bill is as follows:

AN ACT making an apportionment of Representatives in Congress among the several States under the Tenth Census.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, After the 3d of March, 1883, the House of Representatives shall be composed of three hundred and one members, to be apportioned among the several States as follows:

Alabama, 8; Arkansas, 5; California, 5; Colorado, 1; Connecticut, 4; Delaware, 1; Florida, 1; Georgia, 9; Illinois, 19; Indiana, 12; Iowa, 10; Kansas, 6; Kentucky, 10; Louisiana, 6; Maine, 4; Maryland, 6; Massachusetts, 11; Michigan, 10; Minnesota, 5; Mississippi, 7; Missouri, 13; Nebraska, 3; Nevada, 1; New Hampshire, 2; New Jersey, 7; New York, 31; North Carolina, 8; Ohio, 19; Oregon, 1; Pennsylvania, 26; Rhode Island, 2; South Carolina, 6; Tennessee, 9; Texas, 10; Vermont, 2; Virginia, 9; West Virginia, 4; Wisconsin, 8.

SEC. 2. Whenever a new State is admitted to the Union, the Representative or Representatives assigned to it shall be added to the number.

SEC. 3. In each State entitled under this apportionment the number to which such State may be entitled in the Forty-eighth and each subsequent Congress shall be elected by districts composed of contiguous territory and containing as nearly as practicable an equal number of inhabitants and equal in number to the Representatives to which such State may be entitled in Congress, no one district electing more than one Representative.

Mr. COX. I ask that the communication from the Department of the Interior, and the further tables to which I have referred, be printed in

the Record, and that 2,000 copies in pamphlet form be printed for the use of the House.

The SPEAKER. The resolution for printing 2,000 copies must, under the rules, go to the Committee on Printing.

Mr. COX. Can the order not be made by unanimous consent?

The SPEAKER. The law requires that the resolution shall go to the Committee on Printing. There will be little delay occasioned, as the committee can report at any time.

Mr. COX. I ask that the communication and all these tables be printed in the Record.

There was no objection, and it was ordered accordingly.

The resolution for printing 2,000 copies in pamphlet form was referred, under the law, to the Committee on Printing.

The communication from the Interior Department is printed above.

The further tables referred to by Mr. Cox are as follows:

DEPARTMENT OF THE INTERIOR, CENSUS OFFICE,
Washington, D. C., January 17, 1881.

SIR: I have the honor, in compliance with your request, to send you with this a table which exhibits the apportionment of Representatives among the several States, according to their respective populations, as ascertained at the Tenth Census of the United States, upon certain successive assumptions as to the total number of Representatives.

The numbers taken for the purpose range from 293 to 307, both inclusive. It appears that by the increase from 293 to 294, Massachusetts gains 1; by the increase to 295, Louisiana gains 1; by the increase to 296, Pennsylvania gains 1; by the increase to 297, Maryland gains 1; by the increase to 298, New York gains 1; by the increase to 299, Alabama gains 1. When the total number of Representatives is increased to 300, one of the most striking features of the table appears; Alabama loses the Representative she gained at 299, and Texas and Illinois gain 1 each. At 301, Alabama regains the Representative so lost; by the increase to 302, Florida gains 1; by the increase to 303, Ohio gains 1; by the increase to 304, North Carolina gains 1; by the increase to 305, Tennessee gains 1; by the increase to 306, Pennsylvania gains 1.

I have not carried the computation further,* as this was the limit indicated in your request for the preparation of this table. The table exhibits in full the arithmetical process by which the number in each case is reached. The smaller table accompanying (marked Table B) exhibits simply the number of Representatives to be assigned to each State, according to the total number taken.

Respectfully, your obedient servant,

FRANCIS A. WALKER,
Superintendent of Census.

Hon. S. S. COX,
Chairman Committee on Census,
United States House Representatives.

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* Afterwards continued, at the request of the committee, to include the No. 325.

TABLE A.—*Population, ratios, fractions, and members of Congress for each State on tota number of members from* 293 *to* 325.

[To accompany letter of Superintendent of Census to Hon. S. S. Cox, January 17, 1881.]

States.	Population.	293.			294.			295.		
		Ratio, 1 : 168,497.			Ratio, 1 : 167,924.			Ratio, 1 : 167,354.		
		No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.
United States	49, 369, 595	271	3, 706, 908	293	273	3, 526, 343	294	273	3, 681, 953	295
Alabama	1, 262, 794	7	83, 315	7	7	87, 326	7	7	91, 316	7
Arkansas	802, 564	4	128, 576	5	4	130, 868	5	4	133, 148	5
California	864, 686	5	22, 201	5	5	25, 066	5	5	27, 916	5
Colorado	194, 649	1	26, 152	1	1	26, 725	1	1	27, 295	1
Connecticut	622, 683	3	117, 192	4	3	118, 911	4	3	120, 621	4
Delaware	146, 654	.....	146, 654	1	.....	146, 654	1	.....	146, 654	1
Florida	267, 351	1	98, 854	1	1	99, 427	1	1	99, 997	1
Georgia	1, 539, 048	9	22, 575	9	9	27, 732	9	9	32, 862	9
Illinois	3, 078, 769	18	45, 823	18	18	56, 137	18	18	66, 397	18
Indiana	1, 978, 362	11	124, 895	12	11	131, 198	12	11	137, 468	12
Iowa	1, 624, 620	9	108, 147	10	9	113, 304	10	9	118, 434	10
Kansas	995, 966	5	153, 481	6	5	156, 346	6	5	159, 196	6
Kentucky	1, 648, 708	9	132, 235	10	9	137, 392	10	9	142, 522	10
Louisiana	940, 103	5	97, 618	5	5	100, 483	5	5	103, 333	6
Maine	648, 945	3	143, 454	4	3	145, 173	4	3	146, 883	4
Maryland	934, 632	5	92, 147	5	5	95, 012	5	5	97, 862	5
Massachusetts	1, 783, 012	10	98, 042	10	10	103, 772	11	10	109, 472	11
Michigan	1, 636, 331	9	119, 858	10	9	125, 015	10	9	130, 145	10
Minnesota	780, 806	4	106, 818	5	4	109, 110	5	4	111, 390	5
Mississippi	1, 131, 592	6	120, 610	7	6	124, 048	7	6	127, 468	7
Missouri	2, 168, 804	12	146, 840	13	12	153, 716	13	12	160, 556	13
Nebraska	452, 433	2	115, 439	3	2	116, 585	3	2	117, 725	3
Nevada	62, 265	.....	62, 265	1	.....	62, 265	1	.....	62, 265	1
New Hampshire	346, 984	2	9, 990	2	2	11, 136	2	2	12, 276	2
New Jersey	1, 130, 983	6	120, 001	7	6	123, 439	7	6	126, 859	7
New York	5, 083, 810	30	28, 900	30	30	46, 090	30	30	63, 190	30
North Carolina	1, 400, 047	8	52, 071	8	8	56, 665	8	8	61, 215	8
Ohio	3, 198, 239	18	165, 293	19	19	7, 683	19	19	18, 513	19
Oregon	174, 767	1	6, 270	1	1	6, 843	1	1	7, 413	1
Pennsylvania	4, 282, 786	25	70, 361	25	25	84, 686	25	25	98, 936	25
Rhode Island	276, 528	1	108, 031	2	1	108, 604	2	1	109, 174	2
South Carolina	995, 622	5	153, 137	6	5	156, 002	6	5	158, 852	6
Tennessee	1, 542, 463	9	25, 990	9	9	31, 147	9	9	36, 277	9
Texas	1, 592, 574	9	76, 101	9	9	81, 258	9	9	86, 388	9
Vermont	332, 286	1	163, 789	2	1	164, 362	2	1	164, 932	2
Virginia	1, 512, 806	8	164, 830	9	9	1, 490	9	9	6, 620	9
West Virginia	618, 443	3	112, 952	4	3	114, 671	4	3	116, 381	4
Wisconsin	1, 315, 480	7	136, 001	8	7	140, 012	8	7	144, 002	8

TABLE A.—*Population, ratios, fractions, &c.*—Continued.

States.	296.			297.			298.		
	Ratio, 1 : 166,789.			Ratio, 1 : 166,228.			Ratio, 1 : 165,670.		
	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.
United States	274	3, 669, 409	296	274	3, 823, 123	297	277	3, 479, 005	298
Alabama	7	95, 271	7	7	99, 198	7	7	103, 104	7
Arkansas	4	135, 408	5	4	137, 652	5	4	139, 884	5
California	5	30, 741	5	5	33, 546	5	5	36, 336	5
Colorado	1	27, 860	1	1	28, 421	1	1	28, 979	1
Connecticut	3	122, 316	4	3	123, 999	4	3	125, 673	4
Delaware	.....	146, 654	1	.....	146, 654	1	.....	146, 654	1
Florida	1	100, 562	1	1	101, 123	1	1	101, 681	1
Georgia	9	37, 947	9	9	42, 996	9	9	48, 018	9
Illinois	18	76, 567	18	18	86, 665	18	18	96, 709	18
Indiana	11	143, 683	12	11	149, 854	12	11	155, 992	12
Iowa	9	123, 519	10	9	128, 568	10	9	133, 590	10
Kansas	5	162, 021	6	5	164, 826	6	6	1, 946	6
Kentucky	9	147, 607	10	9	152, 656	10	9	157, 678	10
Louisiana	5	106, 158	6	5	108, 963	6	5	111, 753	6
Maine	3	148, 578	4	3	150, 261	4	3	151, 935	4
Maryland	5	100, 687	5	5	103, 492	6	5	106, 282	6
Massachusetts	10	115, 122	11	10	120, 732	11	10	126, 312	11
Michigan	9	135, 230	10	9	140, 279	10	9	145, 301	10
Minnesota	4	113, 650	5	4	115, 894	5	4	118, 126	5
Mississippi	6	130, 858	7	6	134, 224	7	6	137, 572	7
Missouri	13	547	13	13	7, 840	13	13	15, 094	13
Nebraska	2	118, 855	3	2	119, 977	3	2	121, 093	3
Nevada	.....	62, 265	1	.....	62, 265	1	.....	62, 265	1
New Hampshire	2	13, 406	2	2	14, 528	2	2	15, 644	2
New Jersey	6	130, 249	7	6	133, 615	7	6	136, 963	7
New York	30	80, 140	30	30	96, 970	30	30	113, 710	31
North Carolina	8	65, 735	8	8	70, 223	8	8	74, 687	8
Ohio	19	29, 248	19	19	39, 907	19	19	50, 509	19
Oregon	1	7, 978	1	1	8, 539	1	1	9, 097	1
Pennsylvania	25	113, 061	26	25	127, 086	26	25	141, 036	26
Rhode Island	1	109, 739	2	1	110, 300	2	1	110, 858	2
South Carolina	5	161, 677	6	5	164, 482	6	6	1, 602	6
Tennessee	9	41, 362	9	9	46, 411	9	9	51, 433	9
Texas	9	91, 473	9	9	96, 522	9	9	101, 544	9
Vermont	1	165, 497	2	1	166, 058	2	2	946	2
Virginia	9	11, 705	9	9	16, 754	9	9	21, 776	9
West Virginia	3	118, 076	4	3	119, 759	4	3	121, 433	4
Wisconsin	7	147, 957	8	7	151, 884	8	7	155, 790	8

TABLE A.—*Population, ratios, fractions, &c.*—Continued.

States.	299.			300.			301.		
	Ratio, 1 : 165,116.			Ratio, 1 : 164,565.			Ratio, 1 : 164,018.		
	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.
United States	277	3, 632, 463	299	280	3, 291, 395	300	281	3, 280, 537	301
Alabama	7	106, 982	8	7	110, 839	7	7	114, 668	8
Arkansas	4	142, 100	5	4	144, 304	5	4	146, 492	5
California	5	39, 106	5	5	41, 861	5	5	44, 596	5
Colorado	1	29, 533	1	1	30, 084	1	1	30, 631	1
Connecticut	3	127, 335	4	3	128, 988	4	3	130, 629	4
Delaware	.....	146, 654	1	.....	146, 654	1	.....	146, 654	1
Florida	1	102, 235	1	1	102, 786	1	1	103, 333	1
Georgia	9	53, 004	9	9	57, 963	9	9	62, 886	9
Illinois	18	106, 681	18	18	116, 599	19	18	126, 445	19
Indiana	11	162, 086	12	12	3, 582	12	12	10, 146	12
Iowa	9	138, 576	10	9	143, 535	10	9	148, 458	10
Kansas	6	5, 270	6	6	8, 576	6	6	11, 858	6
Kentucky	9	162, 664	10	10	3, 058	10	10	8, 528	10
Louisiana	5	114, 523	6	5	117, 278	6	5	120, 013	6
Maine	3	153, 597	4	3	155, 250	4	3	156, 891	4
Maryland	5	109, 052	6	5	111, 807	6	5	114, 542	6
Massachusetts	10	131, 852	11	10	137, 362	11	10	142, 832	11
Michigan	9	150, 287	10	9	155, 246	10	9	160, 169	10
Minnesota	4	120, 342	5	4	122, 546	5	4	124, 734	5
Mississippi	6	140, 896	7	6	144, 202	7	6	147, 484	7
Missouri	13	22, 296	13	13	29, 459	13	13	36, 570	13
Nebraska	2	122, 201	3	2	123, 303	3	2	124, 397	3
Nevada	.....	62, 265	1	.....	62, 265	1	.....	62, 265	1
New Hampshire	2	16, 752	2	2	17, 854	2	2	18, 948	2
New Jersey	6	140, 287	7	6	143, 593	7	6	146, 875	7
New York	30	130, 330	31	30	146, 860	31	30	163, 270	31
North Carolina	8	79, 119	8	8	83, 527	8	8	87, 903	8
Ohio	19	61, 035	19	19	71, 504	19	19	81, 897	19
Oregon	1	9, 651	1	1	10, 202	1	1	10, 749	1
Pennsylvania	25	154, 886	26	26	4, 096	26	26	18, 318	26
Rhode Island	1	111, 412	2	1	111, 963	2	1	112, 510	2
South Carolina	6	4, 926	6	6	8, 232	6	6	11, 514	6
Tennessee	9	56, 419	9	9	61, 378	9	9	66, 301	9
Texas	9	106, 530	9	9	111, 489	10	9	116, 412	10
Vermont	2	2, 054	2	2	3, 156	2	2	4, 250	2
Virginia	9	26, 762	9	9	31, 721	9	9	36, 644	9
West Virginia	3	123, 095	4	3	124, 748	4	3	126, 389	4
Wisconsin	7	159, 668	8	7	163, 525	8	8	3, 336	8

TABLE A.—*Population, ratios, fractions, &c.*—Continued.

States.	302.			303.			304.		
	Ratio, 1 : 163,475.			Ratio, 1 : 162,936.			Ratio, 1 : 162,400.		
	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.
United States	283	3,106,170	302	283	3,258,707	303	284	3,247,995	304
Alabama	7	118,469	8	7	122,242	8	7	125,994	8
Arkansas	4	148,664	5	4	150,820	5	4	152,964	5
California	5	47,311	5	5	50,006	5	5	52,686	5
Colorado	1	31,174	1	1	31,713	1	1	32,249	1
Connecticut	3	132,258	4	3	133,875	4	3	135,483	4
Delaware	.....	146,654	1	.....	146,654	1	.....	146,654	1
Florida	1	103,876	2	1	104,415	2	1	104,951	2
Georgia	9	67,773	9	9	72,624	9	9	77,448	9
Illinois	18	136,219	19	18	145,921	19	18	155,569	19
Indiana	12	16,662	12	12	23,130	12	12	29,562	12
Iowa	9	153,345	10	9	158,196	10	10	620	10
Kansas	6	15,116	6	6	18,350	6	6	21,566	6
Kentucky	10	13,958	10	10	19,348	10	10	24,708	10
Louisiana	5	122,728	6	5	125,423	6	5	128,103	6
Maine	3	158,520	4	3	160,137	4	3	161,745	4
Maryland	5	117,257	6	5	119,952	6	5	122,632	6
Massachusetts	10	148,262	11	10	153,652	11	10	159,012	11
Michigan	10	1,581	10	10	6,971	10	10	12,331	10
Minnesota	4	126,906	5	4	129,062	5	4	131,206	5
Mississippi	6	150,742	7	6	153,976	7	6	157,192	7
Missouri	13	43,629	13	13	50,636	13	13	57,604	13
Nebraska	2	125,483	3	2	126,561	3	2	127,633	3
Nevada	.....	62,265	1	.....	62,265	1	.....	62,265	.....
New Hampshire	2	20,034	2	2	21,112	2	2	22,184	2
New Jersey	6	150,133	7	6	153,367	7	6	156,583	7
New York	31	16,085	31	31	32,794	31	31	49,410	31
North Carolina	8	92,247	8	8	96,559	8	8	100,847	9
Ohio	19	92,214	19	19	102,455	20	19	112,639	20
Oregon	1	11,292	1	1	11,831	1	1	12,367	1
Pennsylvania	26	32,436	26	26	46,450	26	26	60,386	26
Rhode Island	1	113,053	2	1	113,592	2	1	114,128	2
South Carolina	6	14,772	6	6	18,006	6	6	21,222	6
Tennessee	9	71,188	9	9	76,039	9	9	80,863	9
Texas	9	121,299	10	9	126,150	10	9	130,974	10
Vermont	2	5,336	2	2	6,414	2	2	7,486	2
Virginia	9	41,531	9	9	46,382	9	9	51,206	9
West Virginia	3	128,018	4	3	129,635	4	3	131,243	4
Wisconsin	8	7,680	8	8	11,992	8	8	16,280	8

TABLE A.—*Population, ratios, fractions, &c.*—Continued.

States.	305.			306.			307.		
	Ratio, 1: 161,868.			Ratio, 1: 161,339.			Ratio, 1: 160,813.		
	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.
United States	287	2, 913, 479	305	289	2, 742, 624	306	289	2, 894, 638	307
Alabama	7	129, 718	8	7	133, 421	8	7	137, 103	8
Arkansas	4	155, 092	5	4	157, 208	5	4	159, 312	5
California	5	55, 346	5	5	57, 991	5	5	60, 621	5
Colorado	1	32, 781	1	1	33, 310	1	1	33, 836	1
Connecticut	3	137, 079	4	3	138, 666	4	3	140, 244	4
Delaware	.....	146, 654	1	.....	146, 654	1	.....	146, 654	1
Florida	1	105, 483	2	1	106, 012	2	1	106, 538	2
Georgia	9	82, 236	9	9	86, 997	9	9	91, 731	9
Illinois	19	3, 277	19	19	13, 328	19	19	23, 322	19
Indiana	12	35, 946	12	12	42, 294	12	12	48, 606	12
Iowa	10	5, 940	10	10	11, 230	10	10	16, 490	10
Kansas	6	24, 758	6	6	27, 932	6	6	31, 088	6
Kentucky	10	30, 028	10	10	35, 318	10	10	40, 578	10
Louisiana	5	130, 763	6	5	133, 408	6	5	136, 038	6
Maine	4	1, 473	4	4	3, 589	4	4	5, 693	4
Maryland	5	125, 292	6	5	127, 937	6	5	130, 567	6
Massachusetts	11	2, 464	11	11	8, 283	11	11	14, 069	11
Michigan	10	17, 651	10	10	22, 941	10	10	28, 201	10
Minnesota	4	133, 334	5	4	135, 450	5	4	137, 554	5
Mississippi	6	160, 384	7	7	2, 219	7	7	5, 901	7
Missouri	13	64, 520	13	13	71, 397	13	13	78, 235	13
Nebraska	2	128, 697	3	2	129, 755	3	2	130, 807	3
Nevada	.....	62, 265	1	.....	62, 265	1	.....	62, 265	1
New Hampshire	2	23, 248	2	2	24, 306	2	2	25, 358	2
New Jersey	6	159, 775	7	7	1, 610	7	7	5, 292	7
New York	31	65, 902	31	31	82, 301	31	31	98, 607	32
North Carolina	8	105, 103	9	8	109, 335	9	8	113, 543	9
Ohio	19	122, 747	20	19	132, 798	20	19	142, 792	20
Oregon	1	12, 899	1	1	13, 428	1	1	13, 954	1
Pennsylvania	26	74, 218	26	26	87, 972	27	26	101, 648	27
Rhode Island	1	114, 660	2	1	115, 189	2	1	115, 715	2
South Carolina	6	24, 414	6	6	27, 588	6	6	30, 744	6
Tennessee	9	85, 651	10	9	90, 412	10	9	95, 146	10
Texas	9	135, 762	10	9	140, 523	10	9	145, 257	10
Vermont	2	8, 550	2	2	9, 608	2	2	10, 660	2
Virginia	9	55, 994	9	9	60, 755	9	9	65, 489	9
West Virginia	3	132, 839	4	3	134, 426	4	3	136, 004	4
Wisconsin	8	20, 536	8	8	24, 768	8	8	28, 976	8

TABLE A.—*Population, ratios, fractions, &c.*—Continued.

States.	308.			309.			310.		
	Ratio, 1: 160,291.			Ratio, 1: 159,772.			Ratio, 1: 159,257.		
	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even divisien.	Fraction resulting.	Final number of Representatives.
United States	290	2, 885, 205	308	291	2, 875, 943	309	292	2, 866, 551	310
Alabama	7	140, 757	8	7	144, 390	8	7	147, 995	8
Arkansas	5	1, 109	5	5	3, 704	5	5	6, 279	5
California	5	63, 231	5	5	65, 826	5	5	68, 401	5
Colorado	1	34, 358	1	1	34, 877	1	1	35, 392	1
Connecticut	3	141, 810	4	3	143, 367	4	3	144, 912	4
Delaware	.....	146, 654	1	.....	146, 654	1	.....	146, 654	1
Florida	1	107, 060	2	1	107, 579	2	1	108, 094	2
Georgia	9	96, 429	10	9	101, 100	10	9	105, 735	10
Illinois	19	33, 240	19	19	43, 101	19	19	52, 886	19
Indiana	12	54, 870	12	12	61, 098	12	12	67, 278	12
Iowa	10	21, 710	10	10	26, 900	10	10	32, 050	10
Kansas	6	34, 220	6	6	37, 334	6	6	40, 424	6
Kentucky	10	45, 798	10	10	50, 988	10	10	56, 138	10
Louisiana	5	138 648	6	5	141, 243	6	5	143, 818	6
Maine	4	7, 781	4	4	9, 857	4	4	11, 917	4
Maryland	5	133, 177	6	5	135, 772	6	5	138, 347	6
Massachusetts	11	19, 811	11	11	25, 520	11	11	31, 185	11
Michigan	10	33, 421	10	10	38, 611	10	10	43, 761	10
Minnesota	4	139, 642	5	4	141, 718	5	4	143, 778	5
Mississippi	7	9, 555	7	7	13, 188	7	7	16, 793	7
Missouri	13	85, 021	13	13	91, 768	14	13	98, 463	14
Nebraska	2	131, 851	3	2	132, 889	3	2	133, 919	3
Nevada	.....	62, 265	1	.....	62, 265	1	.....	62, 265	1
New Hampshire	2	26, 402	2	2	27, 440	2	2	28, 470	2
New Jersey	7	8, 946	7	7	12, 579	7	7	16, 184	7
New York	31	114, 789	32	31	130, 878	32	31	146, 843	32
North Carolina	8	117, 719	9	8	121, 871	9	8	125, 991	9
Ohio	19	152, 710	20	20	2, 799	20	20	13, 099	20
Oregon	1	14, 476	1	1	14, 995	1	1	15, 510	1
Pennsylvania	26	115, 220	27	26	128, 714	27	26	142, 104	27
Rhode Island	1	116, 237	2	1	116, 756	2	1	117, 271	2
South Carolina	6	33, 876	6	6	36, 990	6	6	40, 080	6
Tennessee	9	99, 844	10	9	104, 515	10	9	109, 150	10
Texas	9	149, 955	10	9	154, 626	10	10	4	10
Vermont	2	11, 704	2	2	12, 742	2	2	13, 772	2
Virginia	9	70, 187	9	9	74, 858	9	9	79, 493	10
West Virginia	3	137, 570	4	3	139, 127	4	3	140, 672	4
Wisconsin	8	33, 152	8	8	37, 304	8	8	41, 424	8

TABLE A.—*Population, ratios, fractions, &c.*—Continued.

States.	311.			312.			313.		
	Ratio, 1 : 158,745.			Ratio, 1 : 158,236.			Ratio, 1 : 157,730.		
	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.
United States	293	2, 857, 310	311	294	2, 848, 211	312	295	2, 839, 245	313
Alabama	7	151, 579	8	7	155, 142	8	8	954	8
Arkansas	5	8, 839	5	5	11, 384	5	5	13, 914	5
California	5	70, 961	5	5	73, 506	6	5	76, 036	6
Colorado	1	35, 904	1	1	36, 413	1	1	36, 919	1
Connecticut	3	146, 448	4	3	147, 975	4	3	149, 493	4
Delaware	.....	146, 654	1	.....	146, 654	1	.....	146, 654	1
Florida	1	108, 606	2	1	109, 115	2	1	109, 621	2
Georgia	9	110, 343	10	9	114, 924	10	9	119, 478	10
Illinois	19	62, 614	19	19	72, 285	19	19	81, 899	20
Indiana	12	73, 422	13	12	79, 530	13	12	85, 602	13
Iowa	10	37, 180	10	10	42, 260	10	10	47, 320	10
Kansas	6	43, 496	6	6	46, 550	6	6	49, 586	6
Kentucky	10	61, 258	10	10	66, 348	10	10	71, 408	10
Louisana	5	146, 378	6	5	148, 923	6	5	151, 453	6
Maine	4	13, 965	4	4	16, 001	4	4	18, 025	4
Maryland	5	140, 907	6	5	143, 952	6	5	145, 982	6
Massachusetts	11	36, 817	11	11	42, 416	11	11	47, 982	11
Michigan	10	48, 881	10	10	53, 971	10	10	59, 031	10
Minnesota	4	145, 826	5	4	147, 862	5	4	149, 886	5
Mississippi	7	20, 377	7	7	23, 940	7	7	27, 482	7
Missouri	13	105, 119	14	13	111, 736	14	13	118, 314	14
Nebraska	2	134, 943	3	2	135, 961	3	2	136, 973	3
Nevada	.....	62, 265	1	.....	62, 265	1	.....	62, 265	1
New Hampshire	2	29, 494	2	2	30, 512	2	2	31, 524	2
New Jersey	7	19, 768	7	7	23, 331	7	7	26, 873	7
New York	32	3, 970	32	32	20, 258	32	32	36, 450	32
North Carolina	8	130, 087	9	8	134, 159	9	8	138, 207	9
Ohio	20	23, 339	20	20	33, 519	20	20	43, 639	20
Oregon	1	16, 022	1	1	16, 531	1	1	17, 037	1
Pennsylvania	26	155, 416	27	27	10, 414	27	27	24, 076	27
Rhode Island	1	117, 783	2	1	118, 292	2	1	118, 798	2
South Carolina	6	43, 152	6	6	46, 206	6	6	49, 242	6
Tennessee	9	113, 758	10	9	118, 439	10	9	122, 893	10
Texas	10	5, 124	10	10	10, 214	10	10	15, 274	10
Vermont	2	14, 796	2	2	15, 814	2	2	16, 826	2
Virginia	9	84, 101	10	9	88, 682	10	9	93, 236	10
West Virginia	3	142, 208	4	3	143, 735	4	3	145, 253	4
Wisconsin	8	45, 520	8	8	49, 592	8	8	53, 640	8

TABLE A.—*Population, ratios, fractions, &c.*—Continued.

States.	314. Ratio, 1 : 157,928.			315. Ratio, 1 : 156,729.			316. Ratio, 1 : 156,233.		
	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.
United States	295	2,987,335	314	295	3,134,540	315	296	3,124,627	316
Alabama	8	4,970	8	8	8,962	8	8	12,930	8
Arkansas	5	16,424	5	5	18,919	5	5	21,399	5
California	5	78,546	6	5	81,041	6	5	83,521	6
Colorado	1	37,421	1	1	37,920	1	1	38,416	1
Connecticut	3	150,999	4	3	152,496	4	3	153,984	4
Delaware	.....	146,654	1	.....	146,654	1	.....	146,654	1
Florida	1	110,123	2	1	110,622	2	1	111,118	2
Georgia	9	123,996	10	9	128,487	10	9	132,951	10
Illinois	19	91,437	20	19	100,918	20	19	110,342	20
Indiana	12	91,626	13	12	97,614	13	12	103,566	13
Iowa	10	52,340	10	10	57,330	10	10	62,290	10
Kansas	6	52,598	6	6	55,592	6	6	58,568	6
Kentucky	10	76,428	11	10	81,418	11	10	86,378	11
Louisiana	5	153,963	6	5	156,458	6	6	2,705	6
Maine	4	20,033	4	4	22,029	4	4	74,013	4
Maryland	5	148,492	6	5	150,987	6	5	153,467	6
Massachusetts	11	53,504	11	11	58,993	11	11	64,449	11
Michigan	10	64,051	10	10	69,041	11	10	74,001	11
Minnesota	4	151,894	5	4	153,890	5	4	155,874	5
Mississippi	7	30,996	7	7	34,489	7	7	37,961	7
Missouri	13	124,840	14	13	131,327	14	13	137,775	14
Nebraska	2	137,977	3	2	138,975	3	2	139,967	3
Nevada	.....	62,265	1	.....	62,265	1	.....	62,265	1
New Hampshire	2	32,528	2	2	33,526	2	2	34,518	2
New Jersey	7	30,387	7	7	33,880	7	7	37,352	7
New York	32	52,514	32	32	68,482	32	32	84,354	33
North Carolina	8	142,223	9	8	146,215	9	8	150,183	9
Ohio	20	53,679	20	20	63,659	20	20	73,579	20
Oregon	1	17,539	1	1	18,038	1	1	18,534	1
Pennsylvania	27	37,630	27	27	51,103	27	27	64,495	27
Rhode Island	1	119,300	2	1	119,799	2	1	120,295	2
South Carolina	6	52,254	6	6	55,248	6	6	58,224	6
Tennessee	9	127,411	10	9	131,902	10	9	136,366	10
Texas	10	20,294	10	10	25,284	10	10	30,244	10
Vermont	2	17,830	2	2	18,828	2	2	19,820	2
Virginia	9	97,754	10	9	102,245	10	9	106,709	10
West Virginia	3	146,759	4	3	148,256	4	3	149,744	4
Wisconsin	8	57,656	8	8	61,648	8	8	65,616	8

TABLE A.—*Population, ratios, fractions, &c.*—Continued.

States.	317.			318.			319.		
	Ratio, 1: 155,740.			Ratio, 1: 155,250.			Ratio, 1: 154,764.		
	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.
United States	298	2, 959, 075	317	300	2, 794, 595	318	301	2, 785, 631	319
Alabama	8	16, 874	8	8	20, 794	8	8	24, 682	8
Arkansas	5	23, 864	5	5	26, 314	5	5	28, 744	5
California	5	85, 986	6	5	88, 436	6	5	90, 866	6
Colorado	1	38, 909	1	1	39, 399	1	1	39, 885	1
Connecticut	3	155, 463	4	4	1, 683	4	4	3, 627	4
Delaware	.....	146, 654	1	.....	146, 654	1	.....	146, 654	1
Florida	1	111, 611	2	1	112, 101	2	1	112, 587	2
Georgia	9	137, 388	10	9	141, 798	10	9	146, 172	10
Illinois	19	119, 709	20	19	129, 019	20	19	138, 253	20
Indiana	12	109, 482	13	12	115, 362	13	12	121, 194	13
Iowa	10	67, 220	10	10	72, 120	10	10	76, 980	10
Kansas	6	61, 526	6	6	64, 466	6	6	67, 382	6
Kentucky	10	91, 308	11	10	96, 208	11	10	101, 068	11
Louisiana	6	5, 663	6	6	8, 603	6	6	11, 519	6
Maine	4	25, 985	4	4	27, 945	4	4	29, 889	4
Maryland	6	192	6	6	3, 132	6	6	6, 048	6
Massachusetts	11	69, 872	11	11	75, 262	11	11	80, 608	12
Michigan	10	78, 931	11	10	83, 831	11	10	88, 691	11
Minnesota	5	2, 106	5	5	4, 556	5	5	6, 986	5
Mississippi	7	41, 412	7	7	44, 842	7	7	48, 244	7
Missouri	13	144, 184	14	13	150, 554	14	14	2, 108	14
Nebraska	2	140, 953	3	2	141, 933	3	2	142, 905	3
Nevada	.....	62, 265	1	.....	62, 265	1	.....	62, 265	1
New Hampshire	2	35, 504	2	2	36, 484	2	2	37, 456	2
New Jersey	7	40, 803	7	7	44, 233	7	7	47, 635	7
New York	32	100, 130	33	32	115, 810	33	32	131, 362	33
North Carolina	8	154, 127	9	9	2, 797	9	9	7, 171	9
Ohio	20	83, 439	21	20	93, 239	21	20	102, 959	21
Oregon	1	19, 027	1	1	19, 517	1	1	20, 003	1
Pennsylvania	27	77, 806	27	27	91, 036	28	27	104, 158	28
Rhode Island	1	120, 788	2	1	121, 278	2	1	121, 764	2
South Carolina	6	61, 182	6	6	64, 122	6	6	67, 038	6
Tennessee	9	140, 803	10	9	145, 213	10	9	149, 587	10
Texas	10	35, 174	10	10	40, 074	10	10	44, 934	10
Vermont	2	20, 806	2	2	21, 786	2	2	22, 758	2
Virginia	9	111, 146	10	9	115, 556	10	9	110, 930	10
West Virginia	3	151, 323	4	3	152, 693	4	3	154, 151	4
Wisconsin	8	69, 560	8	8	73, 480	8	8	77, 368	8

TABLE A.—*Population, ratios, fractions, &c.*—Continued.

States.	320			321			322		
	Ratio, 1: 154,280			Ratio, 1: 153,199			Ratio, 1: 153,322		
	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.
United States	302	2,777,035	320	306	2,307,101	321	306	2,453,063	322
Alabama	8	28,554	8	8	32,402	8	8	36,218	8
Arkansas	5	31,164	5	5	33,569	5	5	35,954	5
California	5	93,286	6	5	95,691	6	5	98,076	6
Colorado	1	40,369	1	1	40,850	1	1	41,327	1
Connecticut	4	5,563	4	4	7,487	4	4	9,395	4
Delaware	.....	146,654	1	.....	146,654	1	.....	146,654	1
Florida	1	113,071	2	1	113,552	2	1	114,029	2
Georgia	9	150,528	10	10	1,058	10	10	5,828	10
Illinois	19	147,449	20	20	2,789	20	20	12,329	20
Indiana	12	127,002	13	12	132,774	13	12	138,498	13
Iowa	10	81,820	11	10	86,630	11	10	91,400	11
Kansas	6	70,286	6	6	73,172	6	6	76,034	7
Kentucky	10	105,908	11	10	110,718	11	10	115,488	11
Louisiana	6	14,423	6	6	17,309	6	6	20,171	6
Maine	4	31,825	4	4	33,749	4	4	35,657	4
Maryland	6	8,952	6	6	11,838	6	6	14,700	6
Massachusetts	11	85,932	12	11	91,223	12	11	96,470	12
Michigan	10	93,531	11	10	98,341	11	10	103,111	11
Minnesota	5	9,406	5	5	11,811	5	5	14,196	5
Mississippi	7	51,632	7	7	54,999	7	7	58,388	7
Missouri	14	8,884	14	14	15,618	14	14	22,296	14
Nebraska	2	143,873	3	2	144,885	3	2	145,789	3
Nevada	.....	62,265	1	.....	62,265	1	.....	62,265	1
New Hampshire	2	38,424	2	2	39,386	2	2	40,340	2
New Jersey	7	51,023	7	7	54,390	7	7	57,729	7
New York	32	146,850	33	33	8,443	33	33	24,184	33
North Carolina	9	11,527	9	9	15,856	9	9	20,149	9
Ohio	20	112,639	21	20	122,259	21	20	131,799	21
Oregon	1	20,487	1	1	20,968	1	1	21,445	1
Pennsylvania	27	117,226	28	27	130,213	28	27	143,092	28
Rhode Island	1	122,248	2	1	122,729	2	1	123,206	2
South Carolina	6	69,942	6	6	72,828	6	6	75,690	6
Tennessee	9	153,943	10	10	4,473	10	10	9,243	10
Texas	10	49,774	10	10	54,584	10	10	59,354	10
Vermont	2	23,726	2	2	24,688	2	2	25,642	2
Virginia	9	124,286	10	9	128,615	10	9	132,908	10
West Virginia	4	1,323	4	4	3,247	4	4	5,155	4
Wisconsin	8	81,240	8	8	85,088	9	8	88,904	9

TABLE A.—*Population, ratios, fractions, &c.*—Continued.

States.	323.			324.			325.		
	Ratio, 1 : 152,847.			Ratio, 1 : 152,375.			Ratio, 1 : 151,906.		
	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.	No. of Representatives on even division.	Fraction resulting.	Final number of Representatives.
United States	307	2,445,566	323	307	2,590,470	324	309	2,430,641	325
Alabama	8	40,018	8	8	43,794	8	8	47,546	8
Arkansas	5	38,329	5	5	40,689	5	5	43,034	5
California	5	100,451	6	5	102,811	6	5	105,156	6
Colorado	1	41,802	1	1	42,274	1	1	42,743	1
Connecticut	4	11,295	4	4	13,183	4	4	15,059	4
Delaware	.....	146,654	1	.....	146,654	1	.....	146,654	1
Florida	1	114,504	2	1	114,976	2	1	115,445	2
Georgia	10	10,578	10	10	15,298	10	10	19,988	10
Illinois	20	21,829	20	20	31,269	20	20	40,649	20
Indiana	12	144,198	13	12	149,862	13	13	3,584	13
Iowa	10	96,150	11	10	100,870	11	10	105,560	11
Kansas	6	78,884	7	6	81,716	7	6	84,530	7
Kentucky	10	120,238	11	10	124,958	11	10	129,648	11
Louisiana	6	23,021	6	6	25,853	6	6	28,667	6
Maine	4	37,557	4	4	39,445	4	4	41,321	4
Maryland	6	17,550	6	6	20,382	6	6	23,196	6
Massachusetts	11	101,695	12	11	106,887	12	11	112,046	12
Michigan	10	107,861	11	10	112,581	11	10	117,271	11
Minnesota	5	16,571	5	5	18,931	5	5	21,276	5
Mississippi	7	61,663	7	7	64,967	7	7	68,250	7
Missouri	14	28,946	14	14	35,554	14	14	42,120	14
Nebraska	2	146,739	3	2	147,683	3	2	148,621	3
Nevada	.....	62,265	1	.....	62,265	1	.....	62,265	1
New Hampshire	2	41,290	2	2	42,234	2	2	43,172	2
New Jersey	7	61,054	7	7	64,358	7	7	67,641	7
New York	33	39,859	33	33	55,435	33	33	70,912	34
North Carolina	9	24,424	9	9	28,672	9	9	32,893	9
Ohio	20	141,299	21	20	150,739	21	21	8,213	21
Oregon	1	21,920	1	1	22,392	1	1	22,861	1
Pennsylvania	28	3,070	28	28	16,286	28	28	29,418	28
Rhode Island	1	123,681	2	1	124,153	2	1	124,622	2
South Carolina	6	78,540	7	6	81,372	7	6	84,186	7
Tennessee	10	13,993	10	10	18,713	10	10	23,403	10
Texas	10	64,104	10	10	68,824	11	10	73,514	11
Vermont	2	26,592	2	2	27,536	2	2	28,474	2
Virginia	9	137,183	10	9	141,431	10	9	145,652	10
West Virginia	4	7,055	4	4	8,943	4	4	10,819	4
Wisconsin	8	92,704	9	8	96,480	9	8	100,232	9

Exclusive of the Territories and District of Columbia	49,369,595
	783,271
Grand total	50,152,866

FRANCIS A. WALKER,
Superintendent Census.

TABLE B.—*Present members of Congress, and compendium of members under census of* 1880 *from* 293 *to* 325.

States.	Present number.	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307
Alabama	8	7	7	7	7	7	7	8	7	8	8	8	8	8	8	8
Arkansas	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
California	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colorado	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Connecticut	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Delaware	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Florida	2	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
Georgia	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Illinois	19	18	18	18	18	18	18	18	19	19	19	19	19	19	19	19
Indiana	13	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Iowa	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Kansas	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Kentucky	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Louisiana	6	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6
Maine	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Maryland	6	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6
Massachusetts	11	10	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Michigan	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Minnesota	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Mississippi	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Missouri	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Nebraska	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Nevada	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
New Hampshire	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
New Jersey	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
New York	33	30	30	30	30	30	31	31	31	31	31	31	31	31	31	32
North Carolina	8	8	8	8	8	8	8	8	8	8	8	8	9	9	9	9
Ohio	20	19	19	19	19	19	19	19	19	19	19	20	20	20	20	20
Oregon	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pennsylvania	27	25	25	25	26	26	26	26	26	26	26	26	26	26	27	27
Rhode Island	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
South Carolina	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Tennessee	10	9	9	9	9	9	9	9	9	9	9	9	9	10	10	10
Texas	6	9	9	9	9	9	9	9	10	10	10	10	10	10	10	10
Vermont	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Virginia	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
West Virginia	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Wisconsin	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Total	293															

TABLE B.—*Present members of Congress, and compendium of members under census of* 1880 *from* 293 *to* 325—Continued.

States.	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325
Alabama	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Arkansss	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
California	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Colorado	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Connecticut	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Delaware	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Florida	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Georgia	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Illinois	19	19	19	19	19	20	20	20	20	20	20	20	20	20	20	20	20	20
Indiana	12	12	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Iowa	10	10	10	10	10	10	10	10	10	10	10	10	11	11	11	11	11	11
Kansas	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7	7	7	7
Kentucky	10	10	10	10	10	10	11	11	11	11	11	11	11	11	11	11	11	11
Louisiana	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Maine	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Maryland	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Massachusetts	11	11	11	11	11	11	11	11	11	11	11	12	12	12	12	12	12	12
Michigan	10	10	10	10	10	10	10	11	11	11	11	11	11	11	11	11	11	11
Minnesota	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Mississippi	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Missouri	13	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Nebraska	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Nevada	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
New Hampshire	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
New Jersey	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
New York	32	32	32	32	32	32	32	32	33	33	33	33	33	33	33	33	33	34
North Carolina	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Ohio	20	20	20	20	20	20	20	20	20	21	21	21	21	21	21	21	21	21
Oregon	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pennsylvania	27	27	27	27	27	27	27	27	27	27	28	28	28	28	28	28	28	28
Rhode Island	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
South Carolina	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	7	7	7
Tennessee	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Texas	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	11	11
Vermont	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Virginia	9	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
West Virginia	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Wisconsin	8	8	8	8	8	8	8	8	8	8	8	8	8	9	9	9	9	9

FRANCIS A. WALKER,
Superintendent Census.

THE ALABAMA PARADOX—LETTER OF GENERAL F. A. WALKER TO HON. S. S. COX.

DEPARTMENT OF THE INTERIOR, CENSUS OFFICE,
Washington, D. C., January 17, 1881.

DEAR SIR: I have your card requesting me to explain more in detail the peculiar feature of the apportionment tables submitted to you this morning, by which it appears that Alabama gains 1 Representative on the basis of 299 members, increasing from 7 to 8 members at that point, but loses 1 at 300, falling back at that point to 7 members. In reply I would say that this result is to be explained as follows:

In increasing the number of Representatives, as shown in the table sent you, the number of inhabitants required to a Representative is diminished at each such increase of members by between five and six hundred. Now, in dividing by the number so reduced, the population of a State having a comparatively small population, the influence upon its unrepresented fraction is very much less, necessarily, than in the case of a State having a large population. Thus, for example, if we assumed for convenience that the number of inhabitants required for a Representative were 160,000, a State having 4,801,000 inhabitants would receive 30 Representatives, with an unrepresented fraction of 1,000; while a State having a population of 161,000 inhabitants would receive 1 Representative, with an equal unrepresented fraction.

If, however, the number of inhabitants to a Representative were reduced to 159,000, the fraction of the first State would rise to 31,000, while that of the second State would be only increased to 2,000. In other words, the effect upon the unrepresented fraction would be thirty times as great in the former as in the latter case.

Now, in the instances especially referred to, it happens that, with 299 Representatives, three States have fractions very closely approaching each other, namely, Alabama with 106,982, Illinois with 106,681, and Texas with 106,530. The number of inhabitants to a Representative on this basis is 165,116. When the number of Representatives is increased to 300, the number of inhabitants required to a Representative sinks to 164,565, the net reduction being 551. This, which I may call *a gain* for the present purpose, to the States concerned, has to be multiplied in the case of Alabama only by 7 (the number of Representatives assigned that State on an even division), while in the case of Texas it is multiplied by 9, and in the case of Illinois by no less than 18.

The result is that, when we come to take 300 as the number of Representatives, the unrepresented fractions of each of these States must of course increase, but that of Alabama increases least of all.

$$106{,}982 + 7 \times 551 = 110{,}839$$
$$106{,}530 + 9 \times 551 = 111{,}489$$
$$106{,}681 + 18 \times 551 = 116{,}599$$

Alabama's fraction becomes 110,839, while that of Illinois becomes 116,599, and that of Texas 111,489.

Consequently, in the assignment of additional Representatives upon fractions, according to the total number of 300, Illinois and Texas receive an additional Representative each, while Alabama loses that which she gained at 299. At 301, however, she regains what was thus lost, her fraction rising to 114,668, which is sufficient to entitle her to the Repre-

sentative, whose addition to the previous number makes the House consist of 301, instead of 300 members.

Trusting that this explanation will answer your purposes, I remain, truly, yours,

FRANCIS A. WALKER,
Superintendent of Census.

Hon. S. S. Cox,
House of Representatives.

THE MOIETY QUESTION—GENERAL WALKER'S LETTER TO HON. S. S. COX.

DEPARTMENT OF THE INTERIOR, CENSUS OFFICE,
Washington, D. C., January 15, 1881.

DEAR SIR: In response to your request, I would say that I see no correct principle underlying the practice of giving an additional Representative to all States having a moiety of the number of inhabitants taken as the divisor in determining the number of Representatives to which each State shall be entitled under the census. In my view, the only logical method is to take, at the outset, the final number of Representatives, which number shall be used as a divisor in obtaining the ratio of Representatives to population. The ratio so obtained should be applied in succession to the population of each State. This process will yield in the aggregate a number somewhat less than the number of Representatives originally taken. The difference should be made up by assigning to the States having the largest fractions additional Representatives. Whenever a sufficient number of additional Representatives have been assigned, on account of fractions, to make up the total number taken, such assignment should cease. If that number be exceeded, as in the case of the assignment of additional Representatives on account of a moiety, the ratio of representation is thereby changed, whether that excess be one or more, a new ratio is determined, and the work has to be done all over again. It might easily happen that upon the new ratio another State would be found to have a fraction in excess of the moiety, and, therefore, entitled upon the same principle to an additional Representative. The addition of such a Representative, however, giving a new total, would again change the ratio, and the application of that ratio might find still another State in excess of the moiety, and so on.

I inclose a series of tables which afford a practical illustration of this process. In Table I, I have taken 23 communities, which we may assume to be the counties of a State, named A to W, inclusive, having an aggregate population of 120,000. Taking the total number of Representatives at 200, we have 1 Representative to every 600 inhabitants. Applying this ratio in succession to the population of the several counties, we have 190 Representatives assigned upon even division, as appears in column 3, while there is an aggregate of fractions, shown in column 4, of 6,000. Assigning 10 additional Representatives according to the highest fractions, we have, in column 5, the total 200, the original number of Representatives taken. Here, according to my view, the work should stop. If, however, assignments are to be made upon a moiety, we find the county named G receiving an additional Representative, its fraction being greater than one-half of 600. The number of Representatives now, however, has become not 200, but 201, and the ratio is no longer 1 to 600, but 1 to 597. Applying the ratio in succession to the population of the several counties, as in Table II, we have an aggregate number of 192 Representatives upon even division, with an aggregate

of fractions reaching 5,376. Assigning 9 additional Representatives upon the highest fractions, we have the total number 201, the number last taken, but there still remains one county, U, having a fraction in excess of the moiety. This county, therefore upon the moiety principle, must receive an additional Representative, which, however, would make the total number 202, and change the ratio to 1 to 594. Now if G was entitled to an additional Representative, by reason of having a fraction in excess of the moiety of 600, which was *not* the number of inhabitants to a Representative, U is equally entitled to an additional Representative, because it has a fraction in excess of the moiety of 597, which *is* the actual number of inhabitants to a Representative. But if U receives an additional Representative on account of its moiety, then the number of Representatives becomes not 201, but 202, and the ratio becomes 1 to 594. Applying this ratio to the population of the several States in succession, as shown in Table III, we have the number of 194 Representatives assigned upon even division. Giving 8 additional Representatives upon the highest fractions, we have the number 202, according to the scheme; but this still leaves one county, Q, having a fraction in excess of a moiety of 594. Now, upon the moiety principle, Q has just as good right to have an additional Representative as U or G, in the instances previously taken. If, however, this claim is to prevail, the number of Representatives is again changed, namely, to 203, and the ratio is again changed, namely, to 1 to 591; a new distribution takes place, as seen in Table IV, and again a claimant for an additional Representative appears in I, which has a fraction of 299, being more than one-half the number (591) of inhabitants to a Representative.

The result of giving I an additional Representative is shown in table V, where, with a total number of 204 Representatives, yielding the ratio 1 to 588, there still appears a new county, O, which claims an additional Representative on precisely the same grounds as G, U, Q, or I, namely, as having a fraction equal to a moiety of the number of inhabitants to a Representative. And so this thing might go on indefinitely.

I see no rational conclusion, therefore, but that the number first taken, through which, as a divisor, to obtain the numberof inhabitants for a Representative, should be maintained, and so many additional Representatives, and only so many, be assigned upon fractions as are needed to make up the original number. To go beyond this is to lose all hold on any principle governing the matter.

Very respectfully, yours,

FRANCIS A. WALKER,
Superintendent of Census.

Hon. S. S. Cox,
House of Representatives.

ILLUSTRATIVE TABLE I.

[Number of Representatives, 200; ratio, 1 : 600.]

1. Name of county.	2. Population of county.	3. Number of Representatives on even division.	4. Fraction resulting.	5. Final number of Representatives assigned.
A	10,155	16	555	17
B	9,531	15	531	16
C	8,731	14	331	15
D	7,683	12	483	13
E	6,989	11	389	12
F	6,020	10	20	10
G	5,721	9	*321	9
H	5,730	9	330	10
I	5,027	8	227	8
J	5,373	8	573	9
K	4,831	8	31	8
L	4,801	8	1	8
M	4,752	7	552	8
N	4,241	7	41	7
O	4,410	7	210	7
P	3,929	6	329	7
Q	3,879	6	279	6
R	3,689	6	89	6
S	3,600	6	.....	6
T	3,331	5	331	6
U	3,299	5	299	5
V	3,049	5	49	5
W	1,229	2	29	2
	120,000	190	6,000	200

* In excess of moiety of 600.

ILLUSTRATIVE TABLE II.

[Number of Representatives, 201; ratio, 1 : 597.]

1. Name of county.	2. Population of county.	3. Number of Representatives on even division.	4. Fraction resulting.	5. Final number of Representatives assigned.
A	10,155	17	6	17
B	9,531	15	576	16
C	8,731	14	373	13
D	7,683	12	519	13
E	6,989	11	422	12
F	6,020	10	50	10
G	5,721	9	348	10
H	5,730	9	357	10
I	5,027	8	251	8
J	5,373	9	.....	9
K	4,831	8	55	8
L	4,801	8	25	8
M	4,752	7	573	8
N	4,241	7	62	7
O	4,410	7	231	7
P	3,929	6	347	7
Q	3,879	6	297	6
R	3,689	6	107	6
S	3,600	6	18	6
T	3,331	5	346	6
U	3,299	5	*314	5
V	3,049	5	64	5
W	1,229	2	35	2
	120,000	192	5,376	201

* In excess of the moiety of 597.

ILLUSTRATIVE TABLE III.

[Number of Representatives, 202; ratio, 1: 594.]

1. Name of county.	2. Population of county.	3. Number of Representatives on even division.	4. Fraction resulting.	5. Final number of Representatives assigned.
A	10,155	17	57	17
B	9,531	16	27	16
C	8,731	14	415	15
D	7,683	12	555	13
E	6,989	11	455	12
F	6,020	10	80	10
G	5,721	9	375	10
H	5,730	9	384	10
I	5,027	8	275	8
J	5,373	9	27	9
K	4,831	8	79	8
L	4,801	8	49	8
M	4,752	8	.....	8
N	4,241	7	83	7
O	4,410	7	252	7
P	3,929	6	365	7
Q	3,879	6	*315	6
R	3,689	6	125	6
S	3,600	6	36	6
T	3,331	5	361	6
U	3,299	5	329	6
V	3,049	5	79	5
W	1,229	2	41	2
	120,000	194	4,764	202

* In excess of the moiety of 594.

ILLUSTRATIVE TABLE IV.

[Number of Representatives, 203; ratio, 1: 591.]

1. Name of county.	2. Population of county.	3. Number of Representatives on even division.	4. Fraction resulting.	5. Final number of Representatives assigned.
A	10,155	17	108	17
B	9,531	16	75	16
C	8,731	14	457	15
D	7,683	13	.....	13
E	6,989	11	488	12
F	6,020	10	110	10
G	5,721	9	402	10
H	5,730	9	411	10
I	5,027	8	*299	8
J	5,373	9	54	9
K	4,831	8	103	8
L	4,801	8	73	8
M	4,752	8	24	8
N	4,241	7	104	7
O	4,410	7	273	7
P	3,929	6	383	7
Q	3,879	6	333	7
R	3,689	6	143	6
S	3,600	6	54	6
T	3,331	5	376	6
U	3,299	5	344	6
V	3,049	5	94	5
W	1,229	2	47	2
	120,000	195	4,755	203

* In excess of the moiety of 591.

ILLUSTRATIVE TABLE V.

[Number of Representatives, 204; ratio, 1: 588.]

1. Name of county.	2. Population of county.	3. Number of Representatives on even division.	4. Fraction resulting.	5. Final number of Representatives assigned.
A	10,155	17	159	17
B	9,531	16	123	16
C	8,731	14	499	15
D	7,683	13	39	13
E	6,989	11	521	12
F	6,020	10	140	10
G	5,721	9	429	10
H	5,730	9	438	10
I	5,027	8	323	9
J	5,373	9	81	9
K	4,831	8	127	8
L	4,801	8	97	8
M	4,752	8	48	8
N	4,241	7	125	7
O	4,410	7	*294	7
P	3,929	6	401	7
Q	3,879	6	351	7
R	3,689	6	161	6
S	3,600	6	72	6
T	3,331	5	391	6
U	3,299	5	359	6
V	3,049	5	109	5
W	1,229	2	53	2
	120,000	195	5,340	204

*Exactly the moiety of 588.

46TH CONGRESS, 3d Session. } HOUSE OF REPRESENTATIVES. { Ex. DOC. No. 66.

FEES OF CUSTOMS OFFICERS.

LETTER

FROM

THE SECRETARY OF THE TREASURY,

TRANSMITTING

An abstract of the official fees and emoluments of customs officers during the year ended June 30, 1880.

JANUARY 31, 1881.—Referred to the Committee on Expenditures in the Treasury Department and ordered to be printed.

TREASURY DEPARTMENT,
January 29, 1881.

SIR: I have the honor to transmit herewith an abstract of the official emoluments and fees received by customs officers during the fiscal year ended June 30, 1880, prepared in the office of the Commissioner of Customs, in accordance with section 2639 of the Revised Statutes.

Very respectfully,

H. F. FRENCH,
Acting Secretary.

Hon. S. J. RANDALL,
Speaker House of Representatives.

Statement of the official emoluments of officers of the customs for the fiscal

COLLECTORS

District or port.	Name of officer.	Receipts.					
		Balance due United States July 1, 1879.	Salary.	Fees.	Commissions.	Storage.	Advances.
Albany, N. Y	W. N. S. Sanders		$600 00	$971 45	$4, 385 44		
Albemarle, N. C	C. G. Manning		835 15	263 05	186 96		$1, 095 00
Do	do			27 20			
Alexandria, Va	A. A. Warfield			456 29	97 50		1, 200 00
Annapolis, Md	Thomas J. K. Jones		105 30	79 70	26 16		75 00
Do	Thomas Ireland		144 70	49 45	14 04		292 61
Apalachicola, Fla	A. J. Murat		500 00	193 75	87 38		
Aroostook, Me	A. Vandine		1, 000 00	1, 445 85	*596 23		
Alaska	M. D. Ball		2, 500 00	917 55	69 99		5, 175 00
Baltimore, Md	J. L. Thomas, jr		7, 000 00				
Bangor, Me	E. T. Fox			62 34	94		
Do	J. S. Smith			786 24	263 17		3, 444 50
Barnstable, Mass	F. B. Gass			1, 512 92	501 00	$550 00	5, 026 52
Bath, Me	E. S. J. Nealley			2, 107 30	372 86	67 50	915 90
Beaufort, N. C	A. C. Davis		1, 000 00	94 77	84 40		289 49
Beaufort, S. C	George Holmes		1, 000 00	682 77	335 72		115 00
Belfast, Me	W. C. Marshall			846 30	69 67	200 00	842 76
Boston and Charlestown, Mass.	A. W. Beard		8, 000 00				
Bridgeton, N. J	J. H. Elmer		250 00	*506 65	175 58		
Bristol and Warren, R. I.	A. S. De Wolf			48 65	1 04		
Do	John Collins			63 37	1 96		
Brazos de Santiago, Tex.	John L. Haynes		1, 500 00	2, 599 85		2, 000 00	8, 564 84
Brunswick, Ga	John F. Collins		500 00	1, 907 94	574 77		
Buffalo Creek, N. Y.	John Tyler	$13, 401 45	1, 000 00	18, 273 95	18, 600 31	138 00	
Burlington, Iowa	George Frazee		350 00	96 40	15 90		
Burlington, N. J	W. L. Ashmore		150 00	117 40	19 34		
Cairo, Ill	George Fisher		800 00	90 20	30 69		600 00
Cape Vincent, N. Y.	George W. Warren	37 08	1, 000 00	2, 836 25	1, 765 56		4, 905 23
Castine, Me	W. H. Sargent		150 00	808 55	41 17		2, 470 50
Champlain, N. Y	S. Moffitt	10	1, 000 00	8, 316 70	8, 182 72		
Charleston, S. C	C. H. Baldwin	07		3, 297 17	492 56	372 11	6, 700 00
Cherrystone, Va	George Toy		500 00	390 10	208 02		365 00
Do	do		500 00	314 45	187 31		366 00
Chicago, Ill	W. H. Smith	6, 344 74	1, 000 00	20, 315 45	67, 393 32	2, 000 00	
Cincinnati, Ohio	R. H. Stephenson	4, 853 77	350 00	2, 104 70	14, 251 19		
Cuyahoga, Ohio	George W. Howe		1, 000 00	4, 868 24	5, 606 85	14 80	
Corpus Christi, Tex	S. M. Johnson	23 15	1, 500 00	1, 332 46		182 00	4, 700 00
Delaware	Lewis Thompson		500 00	770 78	1, 110 70	5 00	2, 538 48
Detroit, Mich	D. V. Bell		1. 000 00	19, 919 75	7, 115 86	1, 098 00	4, 900 00
Dubuque, Iowa	D. E. Lyon		350 00	125 15	28 09		
Duluth, Minn	V. Smith	100 81	1, 000 00	2, 980 20	54 71	763 50	1, 063 87
Dunkirk, N. Y	P. P. Kidder		1, 000 00	59 65	25 93		
Eastern, Md	Thos. S. Hodson	3, 830 35					
Do	do						
Do	do						
Do	do						
Do	do						
Do	do		1, 200 00	853 40	290 84		
Edgartown, Mass	C. B. Marchant		250 00	396 57	161 66		1, 895 00
Erie, Pa	H. L. Brown		1, 000 00	683 50	169 04		1, 600 00
Evansville, Ind	J. C. Jewell		350 00	575 25	59 30		500 00
Do	do		350 00	273 50	78 89		500 00
Fairfield, Conn	J. S. Hanover		250 00	1, 058 05	78 82		1, 200 00
Fall River, Mass	J. Brady, jr		150 00	1, 133 81	356 55		
Fernandina, Fla	J. W. Howell		500 00	970 41	192 25		
Frenchman's Bay, Me.	J. D. Hopkins		150 00	666 02	457 05	436 10	1, 212 00

year ending June 30, 1880. *Required by section* 2639, *Revised Statutes.*

OF CUSTOMS.

Receipts.	Expenditures.						
Balance due officer June 30, 1880.	Balance due officer July 1, 1879.	Deputies and clerks.	Other expenses.	Compensation.	Deposits.	Balance due United States June 30, 1880.	Remarks.
.....	.....	.....	.....	$5,000 00	$956 89	.....	Surveyor acting as collector.
.....	.....	$1,095 00	.....	1,285 16	.....	.....	To May 1, 1880, when collector died.
.....	.....	.....	.....	.....	27 20	.....	From May 2, 1880. Fees deposited not accruing to collector.
.....	.....	1,200 00	.....	553 79	.....	.....	
.....	.....	75 00	.....	211 16	.....	.....	To December 2, 1879.
.....	.....	292 61	.....	208 24	.....	.....	From December 3, 1879.
.....	.....	.....	.....	781 13	.....	.....	
.....	$16 43	.....	.....	1,500 00	984 05	$541 60	* Includes $20.10 commissions for year 1879, not heretofore reported.
.....	.....	5,175 00	.....	3,487 54	.....	.....	
.....	.....	.....	.....	7,000 00	.....	.....	
.....	.....	.....	.....	63 28	.....	.....	To July 17, 1879.
.....	.....	3,444 50	.....	1,049 41	.....	.....	From July 18, 1879.
.....	.....	5,026 52	.....	2,563 92	.....	.....	
.....	.....	915 90	.....	2,547 66	.....	.....	
.....	.....	288 31	.....	1,179 17	1 05	13	
.....	.....	115 00	.....	2,018 49	.....	.....	
.....	.....	840 17	.....	1,115 97	.....	2 59	
.....	.....	.....	.....	8,000 00	.....	.....	
.....	.....	.....	.....	932 23	.....	.....	* Includes $49.15 fees for 1879, not heretofore reported.
.....	.....	.....	.....	49 69	.....	.....	To February 10, 1880.
.....	.....	.....	.....	65 33	.....	.....	From February 11, 1880.
$10 00	.....	8,564 84	.....	4,500 00	1,609 85	.....	
.....	.....	.....	.....	2,982 72	.....	.....	
.....	.....	11,696 00	.....	2,691 25	12,408 27	24,618 19	
.....	.....	.....	.....	462 30	.....	.....	Surveyor acting as collector.
.....	.....	.....	.....	286 74	.....	.....	
.....	.....	600 00	.....	920 89	.....	.....	Do.
.....	.....	7,907 58	.....	2,575 00	.....	61 54	
.....	.....	2,470 50	.....	999 72	.....	.....	
.....	.....	5,633 65	.....	2,629 50	9,236 37	.....	
.....	.....	6,700 00	.....	4,161 84	.....	07	
.....	.....	365 00	.....	1,098 12	.....	.....	For the year 1879; not heretofore reported.
.....	.....	366 00	.....	1,001 76	.....	.....	
.....	.....	28,817 33	$77 13	4,500 00	63,659 05	.....	
.....	.....	7,098 00	.....	5,000 00	4,853 77	4,607 89	Surveyor acting as collector.
.....	.....	6,635 00	27 25	2,598 28	379 87	1,849 49	
.....	.....	4,848 30	.....	2,682 00	106 15	101 16	
.....	.....	2,538 48	.....	2,386 48	.....	.....	
.....	16 39	29,238 02	.....	3,598 00	1,181 20	.....	
.....	.....	.....	.....	503 24	.....	.....	Surveyor acting as collector.
03	.....	2,498 00	.....	3,263 50	201 62	.....	
.....	.....	.....	.....	1,085 58	.....	.....	
.....	.....	.....	.....	199 30	.....	.....	Additional compensation allowed under decision of U. S. Supreme Court: The U. S., appellants, *v.* Hance Lawson, No. 886, Oct. term, 1879.
.....	.....	.....	.....	1,093 60	.....	.....	
.....	.....	.....	.....	867 60	.....	.....	
.....	.....	.....	.....	797 40	.....	.....	
.....	.....	.....	.....	872 45	.....	.....	
.....	.....	.....	.....	2,344 24	.....	.....	
.....	.....	1,895 00	.....	808 23	.....	.....	
.....	.....	1,600 00	.....	1,852 54	.....	.....	
.....	.....	500 00	.....	984 55	.....	.....	For year 1879, not heretofore reported. Surveyor acting as collector.
.....	.....	500 00	.....	702 39	.....	.....	Surveyor acting as collector.
.....	.....	1,200 00	.....	1,386 87	.....	.....	
.....	.....	.....	.....	1,640 36	.....	.....	
.....	.....	.....	.....	1,662 66	.....	.....	
.....	.....	1,212 00	.....	1,709 17	.....	.....	

Statement of the official emoluments of

COLLECTORS OF

District or port.	Name of officer.	Receipts.					
		Balance due United States July 1, 1879.	Salary.	Fees.	Commissions.	Storage.	Advances.
Galena, Ill	Daniel Wann		$350 00	$66 90	$11 05		$500 00
Galveston, Tex	E. M. Pease		1,500 00	2,552 47		$1,261 00	8,500 00
Genesee, N. Y	W. T. Simpson		1,000 00	1,648 90	3,150 24		2,635 36
Georgetown, D. C	F. Dodge		500 00	685 83	345 87	28 61	
Georgetown, S. C	H. F. Heriot		250 00	206 75	41 71		
Gloucester, Mass	F. J. Babson	$440 06	250 00	3,211 35	265 72	528 00	2,875 00
Great Egg Harbor, N. J.	I. S. Adams		250 00	293 43	211 43		600 00
Huron, Mich	J. P. Sanborn	129 46	1,000 00	20,752 25	6,743 73		1,000 00
Kennebunk, Me	J. W. Sargent			138 55	1 99		600 00
Key West, Fla	F. N. Wicker	361 05	500 00	4,862 92	5,626 34	2,000 00	176 09
La Crosse, Wis	I. H. Moulton		1,200 00				
Little Egg Harbor, N. J.	J. H. Bartlett		63 86	34 90	6 72		
Do	Geo. T. Cranmer		186 14	110 60	77 26		600 00
Louisville, Ky	T. O. Shackelford		350 00	819 45	1,652 40	74 40	4,150 00
Machias, Me	George Leavitt		250 00	1,792 41	44 67		
Marblehead, Mass	S. Dodge			323 02	20 60		
Memphis, Tenn	W. J. Smith		350 00	216 60	504 00	1,200 00	1,000 00
Miami, Ohio	J. W. Fuller		1,000 00	2,928 70	816 98	12 00	343 38
Michigan	H. C. Akeley		1,000 00	10,849 95	524 91		
Middletown, Conn	Aug. Putnam			840 95	1,478 15	100 00	2,423 09
Milwaukee, Wis	John Nazro	1,615 01	1,000 00	6,195 55	4,779 84	197 65	
Minnesota, Dakota Territory.	J. Frankenfield	1,689 16					
Do	E. McMurtie	30 53	1,000 00	3,763 05	656 18		1,098 00
Mobile, Ala	R. T. Smith		250 00	1,708 27	1,587 17	61 20	3,754 56
Montana and Idaho	Thomas A. Cummings.		1,000 00	143 80	120 00		300 00
Nantucket, Mass	W. P. Hiller		250 00	87 45	269 95		1,250 00
Nashville, Tenn	Adam Woolf		350 00	140 95	52 00	4 20	
Natchez, Miss	E. J. Castello		500 00	1 00	4 78		
Newark, N. J	W. A. Baldwin		250 00	481 53	254 12		1,200 00
New Bedford, Mass	J. A. P. Allen			1,213 01	781 36	37 30	2,400 00
Newburyport, Mass	W. H. Huse			371 62	39 30	18 00	
New Haven, Conn	C. Northrop			2,385 75	9,109 70	200 00	
New London, Conn	J. A. Tibbits			1,677 92	1,390 70	25 00	1,600 00
New Orleans, La	A. S. Badger		7,000 00				
Newport, R. I	F. A. Pratt			865 47	415 23		1,000 00
New York, N. Y	E. A. Merritt		12,000 00				
Niagara, N. Y	B. Flagler	8,986 01	1,000 00	17,887 70	15,493 16	2,000 00	
Norfolk, Va	L. Lee, jr	416 54					
Do	J. S. Braxton	10 81		244 08	15 49		450 66
Do	G. E. Bowden			2,944 45	1,080 86		3,776 65
Omaha, Nebr	John Campbell		350 00	62 65	80 84		
Oswegatchie, N. Y	S. P. Remington	12 92	634 61	3,511 55	3,818 17	56 00	1,704 94
Do	W. H. Daniels		250 00	1,573 35	1,226 01	24 00	1,474 65
Oregon, Oreg	W. D. Hare		3,000 00				
Oswego, N. Y	D. G. Fort	14,617 06	1,000 00	5,949 25	22,199 51	2,000 00	7,830 14
Paso del Norte, Tex	S. C. Slade		2,000 00				
Passamaquoddy, Me	N. B. Nutt	2,004 35	500 00	6,531 21	2,614 31		
Patchogue, N. Y	E. T. Moore			296 05			
Pamlico, N. C	Thos. A. Henry		1,000 00	545 72	327 76		2,717 30
Pearl River, Miss	W. G. Henderson		250 00	861 24	405 48		
Pensacola, Fla	H. Potter, jr	91 63					
Do	F. C. Humphreys		1,000 00	3,441 20	1,946 34		1,907 43
Perth Amboy, N. J	C. H. Houghton		250 00	1,297 98	584 22		1,800 00
Petersburgh, Va	D. G. Carr			288 70	3 15		1,166 20
Philadelphia, Pa	A. P. Tutton		8,000 00				
Pittsburgh, Pa	J. S. Rutan		350 00	919 15	9,465 70		4,200 00
Plymouth, Mass	S. H. Doten		150 00	128 84	282 96		1,400 00
Port Jefferson, N. Y	S. R. Davis			370 85			
Portland, Me	L. M. Morrill		6,000 00				
Portsmouth, N. H	A. F. Howard			457 11	284 28		
Puget Sound, Wash	H. A. Webster	488 52	1,000 00	2,638 63	662 79		4,477 65
Providence, R. I	C. Harris			2,484 39	5,009 80	996 08	940 05
Richmond, Va	C. S. Mills			1,597 64	332 43		1,600 00
Saco, Me	Ivory Lord		250 00	94 35	4 40		450 00

officers of the customs, &c.—Continued.

CUSTOMS—Continued.

Receipts.	Expenditures.						
Balance due officer June 30, 1880.	Balance due officer July 1, 1879.	Deputies and clerks.	Other expenses.	Compensation.	Deposits.	Balance due United States June 30, 1880.	Remarks.
.....	.....	$500 00	.....	$427 95	.....	.....	Surveyor acting as collector.
.....	.....	8,500 00	.....	3,761 00	$1,552 47	.....	
.....	.....	5,900 00	.....	2,534 50	.....	.....	
.....	.....	.....	.....	1,560 31	.....	.....	
.....	.....	.....	.....	498 46	.....	.....	
.....	.....	2,856 00	.....	3,528 00	1,040 06	$146 07	
.....	.....	600 00	.....	754 86	.....	.....	
.....	.....	14,267 50	.....	2,825 24	11,114 20	1,418 50	
.....	.....	600 00	.....	140 54	.....	.....	
$34 01	.....	8,560 41	.....	5,000 00	.....	.....	
.....	.....	.....	.....	1,200 00	.....	.....	Surveyor acting as collector To October 2, 1879.
.....	.....	.....	.....	105 48	.....	.....	
.....	.....	600 00	.....	374 00	.....	.....	From October 3, 1879.
.....	.....	4,150 00	.....	2,896 25	.....	.....	Surveyor acting as collector.
.....	.....	.....	.....	2,087 08	.....	.....	
.....	.....	.....	.....	343 62	.....	.....	
.....	.....	1,000 00	$2,270 60	.....	.....	.....	Surveyor acting as collector.
.....	.....	2,396 14	.....	2,595 50	109 42	.....	
53	.....	4,960 29	.....	2,900 00	4,515 10	.....	
.....	.....	2,423 09	.....	2,419 10	.....	.....	
.....	.....	4,783 10	.....	2,950 85	4,414 31	1,639 79	
.....	.....	.....	.....	.....	1,689 16	.....	
.....	.....	1,098 00	.....	2,500 00	.....	2,949 76	
.....	.....	4,300 00	.....	3,061 20	.....	.....	
.....	.....	297 58	.....	1,263 80	.....	2 42	
.....	.....	1,250 00	.....	607 40	.....	.....	
.....	.....	.....	.....	547 15	.....	.....	Surveyor acting as collector.
.....	.....	.....	.....	505 78	.....	.....	
.....	.....	1,200 00	.....	985 65	.....	.....	
.....	.....	2,400 00	.....	2,031 67	.....	.....	
.....	.....	.....	.....	428 92	.....	.....	
.....	$3 72	3,400 00	.....	3,200 00	.....	5,091 73	
.....	.....	1,600 00	.....	3,093 62	.....	.....	
.....	.....	.....	.....	7,000 00	.....	.....	
.....	.....	1,000 00	.....	1,280 70	.....	.....	
.....	.....	.....	.....	12,000 00	.....	.....	
.....	.....	8,780 47	.....	4,500 00	16,593 24	15,493 16	
.....	.....	.....	.....	.....	311 09	105 45	
.....	.....	353 80	.....	259 57	107 67	.....	To August 24, 1879.
.....	.....	3,776 65	.....	2,942 81	843 91	238 59	From August 25, 1879.
.....	.....	.....	.....	493 49	.....	.....	Surveyor acting as collector.
.....	.....	7,474 50	.....	1,662 79	600 90	.....	To March 31, 1880.
.....	.....	3,786 10	.....	669 25	.....	92 66	From April 1, 1880.
.....	.....	.....	.....	3,000 00	.....	.....	
.....	.....	11,768 54	.....	4,500 00	14,617 08	22,710 34	
.....	.....	.....	.....	2,000 00	.....	.....	
.....	.....	4,095 30	.....	3,000 00	400 00	4,154 57	
.....	.....	.....	.....	296 05	.....	.....	Surveyor acting as collector.
.....	.....	2,717 30	.....	1,873 48	.....	.....	
.....	.....	.....	.....	1,516 72	.....	.....	
.....	.....	.....	.....	.....	.....	91 63	
.....	.....	5,258 00	.....	3,036 97	.....	.....	
.....	.....	1,800 00	.....	2,132 20	.....	.....	
.....	.....	1,166 20	.....	291 85	.....	.....	
.....	.....	.....	.....	8,000 00	.....	.....	
.....	.....	4,200 00	.....	5,000 00	.....	5,734 85	Surveyor acting as collector.
.....	.....	1,400 00	.....	561 80	.....	.....	
.....	.....	.....	.....	370 85	.....	.....	Surveyor acting as collector.
.....	.....	.....	.....	6,000 00	.....	.....	
.....	.....	.....	.....	741 39	.....	.....	
.....	.....	5,500 00	.....	3,279 07	485 31	3 21	
.....	.....	4,000 00	.....	3,996 08	1,434 10	14	
.....	.....	1,600 00	.....	1,930 07	.....	.....	
.....	.....	450 00	.....	348 75	.....	.....	

Statement of the official emoluments of

COLLECTORS OF

District or port.	Name of officer.	Receipts.					
		Balance due United States July 1, 1879.	Salary.	Fees.	Commissions.	Storage.	Advances.
Sag Harbor, N. Y ..	W. S. Havens	.....	$400 00	$56 70	$177 95	.....	$480 00
Salem and Beverly, Mass.	C. H. Odell	.....	.....	803 24	65 67	.....	1, 600 00
Saluria, Tex	C. R. Prouty	.....	1, 500 00	1, 018 41	78 87	.....	2, 692 69
San Diego, Cal	W. W. Bowers	.....	3, 000 00	.....	.....	.....	.....
Sandusky, Ohio	J. G. Pool	.....	1, 000 00	2, 434 25	147 92	.....	1, 568 57
San Francisco, Cal .	T. B. Shannon	.....	7, 000 00	.....	.....	.....	.....
Savannah, Ga	J. Atkins	.....	.....	2, 899 69	563 38	$103 95	6, 700 00
St. Augustine, Fla .	Thomas F. House .	$69 22	500 00	24 00	81 60	.....	764 03
Saint John's, Fla...	E. Hopkins	.....	500 00	830 83	63 32	.....	557 50
Saint Louis, Mo....	E. W. Fox	*25, 360 62	.....	.....	.....	21 49	†24 90
Do	G. St. Gem	13, 147 07	350 00	‡2, 422 80	34, 722 41	1, 465 69	.....
Saint Mark's, Fla ..	J. M. Currie	.....	500 00	791 41	291 92	.....	750 00
Saint Mary's, Ga ...	J. Shepard	.....	198 35	86 26	6 32	.....	225 00
Do	Thos. M. Blodgett.	.....	301 65	108 28	28 85	.....	325 60
Southern, Oreg	Isaiah Hacker	.....	1, 000 00	61 20	.....	.....	1, 000 00
Stonington, Conn ..	George Hubbard ..	20	150 00	517 74	179 24	.....	1, 000 00
Superior, Mich.....	C. Y. Osborn	.....	1, 000 00	3, 560 15	582 80	.....	2, 846 95
Tappahannock, Va.	J. T. Hoskins	.....	230 77	201 40	136 70	.....	450 00
Do	B. Upton, jr	.....	19 23	14 40	37 37	.....	150 00
Teche, La.....	J. R. Jolley	.....	1, 000 00	416 24	41 11	.....	.....
Vermont.....	William Wells....	15, 772 37	1, 000 00	28, 164 65	22, 857 41	2 74	11, 529 35
Vicksburg, Miss ...	P. C. Hall	.....	125 00	1 00	22 01	.....	.....
Do	Charles Lehman ..	.....	375 00	9 70	4 99	.....	.....
Waldoborough, Me.	J. A. Hall	.....	250 00	1, 499 89	97 72	.....	.....
Wheeling, W. Va ..	J. Gilchrist	.....	350 00	456 20	121 55	.....	300 00
Wiscasset, Me	O. McFadden	.....	200 00	436 18	13 35	.....	.....
Willamette, Oreg ..	John Kelly	1, 372 33	1, 000 00	1, 464 50	2, 460 00	1, 200 00	5, 959 42
Wilmington, N. C ..	J. C. Abbott	745 33	.....	.....	.....	.....	.....
Do	W. P. Canaday	2 57	1. 000 00	2, 401 09	1, 361 40	152 66	4 445 78
York, Me	E. A. Bragdon.....	.....	250 00	17 90	47	.....	.....
Yorktown, Va	J. B. Mitchell	.....	200 00	431 55	32 16	.....	551 16
Total	.....	115, 954 34	126, 269 76	285, 878 50	305, 817 74	21, 596 98	180, 374 80

RECAPIT

Balance due United States July 1, 1879	$115, 954 34	
Salary	126, 269 76	
Fees	285, 878 50	
Commissions	305, 817 74	
Storage	21, 596 98	
Advances	180, 374 80	
Balance due officers June 30, 1880	436 71	
		$1, 036, 328 83
Contra:		
Balance due officers July 1, 1879	286 54	
Deputies and clerk	389, 884 96	
Other expenses	104 38	
Compensation	299, 493 90	
Deposits	214, 108 25	
Balance due United States June 30, 1880	132, 450 80	
		1, 036, 328 83

officers of the customs, &c.—Continued.

CUSTOMS—Continued.

Receipts.	Expenditures.						Remarks.
Balance due officer June 30, 1880.	Balance due officer July 1, 1879.	Deputies and clerks.	Other expenses.	Compensation.	Deposits.	Balance due United States June 30, 1880.	
.....	.....	$480 00	.....	$634 65	.....	.....	
.....	.....	1,600 00	.....	868 91	.....	.....	
.....	.....	2,692 69	.....	2,578 87	$18 41	.....	
.....	.....	.....	.....	3,000 00	.....	.....	
.....	.....	2,552 50	.....	2,598 24	.....	.....	
.....	.....	.....	.....	7,000 00	.....	.....	
.....	.....	6,700 00	.....	3,567 02	.....	.....	
.....	.....	828 83	.....	605 60	4 42	.....	
.....	.....	557 50	.....	1,394 15	.....	.....	
.....	.....	.....	.....	21 49	25,385 52	.....	*Balance due from surveyor July 9, 1874. †Interest on debt due United States.
.....	.....	18,237 70	.....	5,000 00	13,150 47	$15,719 80	‡Includes $340 fees for 1879. Surveyor acting as collector.
.....	.....	750 00	.....	1,583 33	.....	.....	
.....	.....	225 00	.....	290 93	.....	.....	To November 23, 1879.
.....	.....	299 80	.....	438 78	25 80	.....	From November 24, 1879.
$250 00	$250 00	1,000 00	.....	1,061 20	.....	.....	
.....	.....	1,000 00	.....	846 98	.....	20	
.....	.....	5,089 90	.....	2,900 00	.....	.....	
.....	.....	450 00	.....	568 87	.....	.....	To June 2, 1880.
.....	.....	150 00	.....	71 00	.....	.....	From June 3, 1880.
.....	.....	.....	.....	1,457 35	.....	.....	
.....	.....	38,194 00	.....	2,593 62	15,772 37	22,766 53	$99.92 compensation in lieu of moieties.
.....	.....	.....	.....	148 01	.....	.....	To September 30, 1879.
.....	.....	.....	.....	389 69	.....	.....	From October 1, 1879.
.....	.....	.....	.....	1,847 61	.....	.....	
.....	.....	.....	.....	927 75	.....	300 00	Surveyor acting as collector.
.....	.....	.....	.....	649 53	.....	.....	
142 14	.....	5,959 42	.....	4,200 00	3,438 97	.....	
.....	.....	.....	.....	.....	745 33	.....	
.....	.....	4,445 78	.....	2,775 38	133 60	2,008 74	
.....	.....	.....	.....	268 37	.....	.....	
.....	.....	551 16	.....	663 71	.....	.....	
436 71	286 54	389,884 96	$104 38	299,493 90	214,108 25	132,450 80	

ULATION.

Balance due the United States July 1, 1879, per this report		$115,954 34
Balance due the United States July 1, 1879, per last report		95,712 12
Difference		20,242 22
Arises thus:		
Balance due from E. W. Fox, Saint Louis, Mo., July 9, 1874, account lately adjusted and included in this report	25,360 62	
Less:		
Balance due from Thomas J. Hodson, eastern district Maryland, for years 1877 and 1878, not included in this report, viz:		
For 1877	2,160 50	
For 1878	2,957 90	
	5,118 40	
		20,242 22

TREASURY DEPARTMENT,
OFFICE OF COMMISSIONER OF CUSTOMS,
January 28, 1881.

H. C. JOHNSON,
Commissioner of Customs.

Statement of the official emoluments of officers of the customs, &c.—Continued.

NAVAL OFFICERS.

District or port.	Name of officer.	Receipts.							Expenditures.						Remarks.
		Balance due United States July 1, 1879.	Salary.	Fees.	Commissions.	Storage.	Advances.	Balance due officer June 30, 1880.	Balance due officer July 1, 1880.	Deputies and clerks.	Other expenses.	Compensation.	Deposits.	Balance due United States June 30, 1880.	
Baltimore, Md	William Corkran	.....	$5,000 00	.....	.....	.....	.....	.....	.....	.....	.....	$5,000 00	.....	.....	
Boston, Mass	Daniel Hall	.....	5,000 00	.....	.....	.....	.....	.....	.....	.....	.....	5,000 00	.....	.....	
New Orleans, La	James Lewis	.....	5,000 00	.....	.....	.....	.....	.....	.....	.....	.....	5,000 00	.....	.....	
New York, N. Y	S. W. Burt	.....	8,000 00	.....	.....	.....	.....	.....	.....	.....	.....	8,000 00	.....	.....	
Philadelphia, Pa	J. A. Hiestand	.....	2,500 00	.....	.....	.....	.....	.....	.....	.....	.....	2,500 00	.....	.....	For part year 1879 not heretofore reported.
Do	James Pollock	.....	6,250 00	.....	.....	.....	.....	.....	.....	.....	.....	*6,250 00	.....	.....	*Of this, $12.50 belongs to year 1879, not heretofore reported.
San Francisco, Cal.	E. G. Waite	.....	5,000 00	.....	.....	.....	.....	.....	.....	.....	.....	5,000 00	.....	.....	
Total		.....	36,750 00	.....	.....	.....	.....	.....	.....	.....	.....	36,750 00	.....	.....	

TREASURY DEPARTMENT, OFFICE COMMISSIONER OF CUSTOMS,
January 28, 1881.

H. C. JOHNSON,
Commissioner of Customs.

Statement of the official emoluments of officers of the customs, &c.—Continued.

SURVEYORS OF CUSTOMS.

District or port.	Name of officer.	Receipts.							Expenditures.						Remarks.
		Balance due United States July 1, 1879.	Salary.	Fees.	Commissions.	Storage.	Advances.	Balance due officer June 30, 1880.	Balance due officer July 1, 1879.	Deputies and clerks.	Other expenses.	Compensation.	Deposits.	Balance due United States June 30, 1880.	
Baltimore, Md	G. W. F. Vernon	.....	$4,500 00	.....	.....	.....	.....	.....	.....	.....	.....	$4,500 00	.....	.....	
Boston, Mass	A. B. Underwood	.....	5,000 00	.....	.....	.....	.....	.....	.....	.....	.....	5,000 00	.....	.....	
Greenport, N. Y	W. Z. King	.....	.....	$561 95	.....	.....	.....	.....	.....	.....	.....	561 95	.....	.....	
Michigan City, Ind	Thomas Jernegan	.....	350 00	.....	.....	.....	.....	.....	.....	.....	.....	350 00	.....	.....	
New York, N. Y	C. K. Graham	.....	8,000 00	.....	.....	.....	.....	.....	.....	.....	.....	8,000 00	.....	.....	
New Orleans, La	J. M. G. Parker	$1,465 82	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$1,465 82	
Do	J. M. Wells	.....	3,500 00	.....	.....	.....	.....	.....	.....	.....	.....	3,500 00	.....	.....	
Philadelphia, Pa	E. O'M. Goodrich	.....	5,000 00	.....	.....	.....	.....	.....	.....	.....	.....	5,000 00	.....	.....	
Portland, Me	G. W. True	.....	4,500 00	.....	.....	.....	.....	.....	.....	.....	.....	4,500 00	.....	.....	To May 27, 1880. Deputy surveyor performed the duties from May 28 to June 30, 1880.
San Francisco, Cal	Paul Morrill	.....	4,532 98	.....	.....	.....	.....	.....	.....	.....	.....	4,532 98	.....	.....	
		1,465 82	35,382 98	561 95	.....	.....	.....	.....	.....	.....	.....	35,944 93	.....	1,465 82	

TREASURY DEPARTMENT,
OFFICE OF COMMISSIONER OF CUSTOMS,
January 28, 1881.

H. C. JOHNSON,
Commissioner of Customs.

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